THE physical therapy REVIEW

Volume 33 - Number 3 March 1953

Physical Medicine in Cardiovascular Disease — DUPLER

Fractures, Sprains and Strains in Industrial Disabilities — GOPADZE

Electromyography in the Practice of Physical Medicine — PARTRIDGE and RODRIQUEZ

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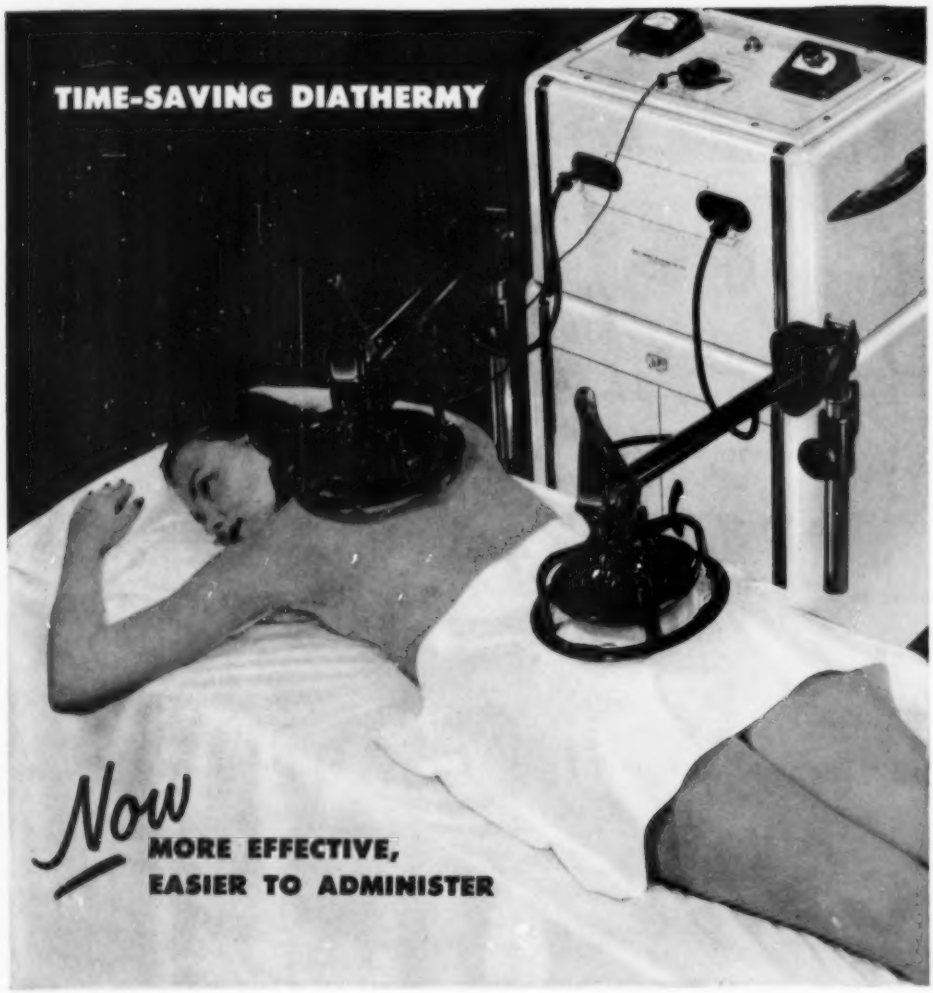

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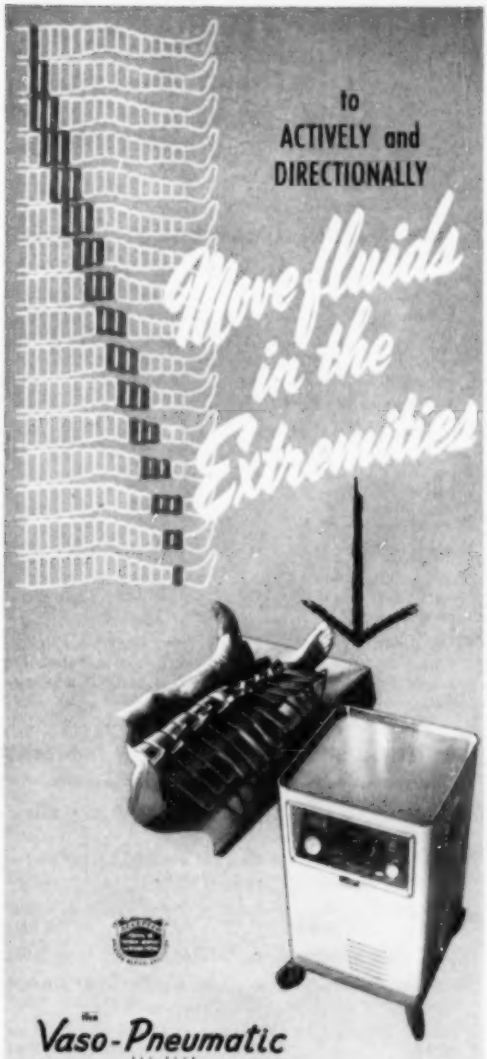

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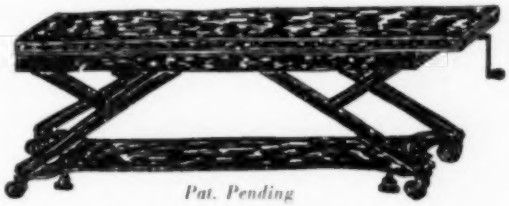

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The Physical Therapy Review

Official Publication of The American Physical Therapy Association

Volume 33 March 1953 Number 3

*Physical Medicine in Cardiovascular Disease**

Donald A. Dupler, M.D.

INTRODUCTION:

It is the purpose of this paper to present some aspects of physical medicine in relation to internal medicine and more specifically, cardiovascular disease. It is obvious that in the short space allotted, only a few high spots can be covered.

It must be admitted that physical medicine is an enigma to most physicians. The four years of medical school are crowded and the emphasis now is placed on finding the specific cause of a disease and then giving specific treatment. There has not been enough time spent on the use of physical agents, in spite of the fact that such agents as heat, massage, water, and exercise for therapeutic purposes have been used since ancient times. It is only after facing the practical difficulties in treating patients does the medical man learn the value of physical therapy.

This specialty now has come of age, and must assume responsibility. I would plead for cooperation between the internist and the physical therapist. The medical man must make an accurate diagnosis, recognize the need for physical therapy, and have some knowledge of what to do for a problem. The physical therapist should know how to give the best type of treatment for that particular case. Do not expect the medical man to know much of the detail of physical therapy technic. It is the rare physician who has kept up with the technical progress in physical medicine. The relationship can be compared to a team of anesthetist, surgeon, and cardiologist. The cardiologist must alert the surgeon and anesthetist as to the diagnosis and dangers in any specific heart condition. The anesthetist must take over from there. He knows better than anyone else what anesthetic agents are suitable, the type of operation, the position the patient has to take, the idiosyncrasies of the surgeon, and so forth.

Physical medicine plays a vital role in the rehabilitation of the elderly and chronically ill. The aging population in general, and the immediate manpower shortage have focused attention on the importance of making these people productive, useful citizens. Howard Rusk, in recent years, particularly has emphasized this point. Most of these illnesses and the care of the aged fall within the province of the internist and cardiologist or the general practitioner.

GENERAL INDICATIONS FOR PHYSICAL THERAPY

In general, I would like to mention a few indications for physical therapy in any patient, which are apt to be overlooked:

(1) Convalescent care after any long illness; for example, tuberculosis, rheumatic fever, ne-

Associate in Medicine, University of Pennsylvania Graduate School of Medicine, Chief of Cardiac Clinic, Graduate Hospital.

* Read at the Annual Conference of the American Physical Therapy Association, Philadelphia, June, 1952.

phritis, and debilitating operations. An effort should be made to use the long period of hospitalization or convalescence for preparation for ultimate employment. Obviously, one must have an understanding of the limitations which the illness imposes and what type of job can be done eventually. A good program would include occupational therapy and physical conditioning according to the status of the patient. After any long illness, the patient must be reassured as to his capacity to adjust again to the physical and mental stress of society. Physical therapy can make a great contribution in boosting morale towards this end.

(2) The care of the chronic bed patient, due to any illness. These patients are most discouraging to everyone concerned. The most common example is progressive cerebrovascular disease. These patients overcrowd our nursing homes and chronic hospitals, and for every one in an institution, there are many more in private homes. Anything that can be done to help these patients in simple muscular activity, such as turning over, feeding themselves, toilet care, etc., makes a tremendous difference in the daily activity of both the patient and family. There can be no doubt that much of the disability could be prevented and a great deal of it improved if adequate physical therapy had been started early.

CONTRAINDICATIONS TO PHYSICAL THERAPY

There are a few generalizations about contraindications to physical therapy worth mentioning.

During the acute stage of most systemic diseases, physical therapy may be harmful. For instance, acute rheumatic fever, active tuberculosis, and some of the acute infectious diseases. I would point out that these patients still may be classified as acute from the medical viewpoint, even though they are afebrile and not in pain. For instance, there are a group of people with active rheumatic fever who smolder along with little more than an elevated sedimentation rate and general weakness. It sometimes takes months or even a year before these people quiet down. During this period there is an active myocarditis and their reserve is poor.

There are local disease processes also in which physical therapy is contraindicated. If pain in the low back is due to metastatic cancer, it is not going to be helped by physical therapy. More and more, the alert specialist in one field or another is calling in the internist for a thorough, complete medical evaluation in cases where the apparent local disease cannot be clearly explained. In many cases, it is due to some generalized disease with local manifestations. As an example of this, we would mention gout. At times the diagnosis of gout is not easy. Before someone is alert enough to discover the cause of joint pain and stiffness, the patient has had useless and painful physical therapy. Gout may mimic most other forms of acute arthritis. Clues to remember in its diagnosis are:

(a) Remember gout as a differential diagnosis.
(b) Uric acid is always high or occasionally borderline in the acute episode if the test is properly done.
(c) About 90 per cent of gout occurs in men.
(d) Only about 50 per cent involves the great toe only.

During the acute attack, physical therapy cannot be used. For the chronic type wisely chosen physical therapy, joint aspirations, immobilization of joints, correction of deformities, special shoes, and occasionally operative procedures may be indicated in selected cases. ACTH or cortisone may be helpful.

SPECIAL PROBLEMS IN CARDIOVASCULAR DISEASE

Heart disease in general

The American Heart Association, which includes all well run cardiac clinics, recognizes the importance of physical activity in rehabilitation by including in a complete cardiac diagnosis, a classification of that patient's functional capacity. Class I has no limitation, Class II slight limitation, Class III marked limitation, and Class IV no activity except bed care. It is evident that a patient's classification may vary with the status of his disease. For instance, an acute myocardial infarction, an acute congestive failure, or acute rheumatic fever may pass through all classes as the illness subsides. A knowledge of this classification by the physical therapist and close cooperation with the physician will aid greatly in a more rapid rehabilitation.

Specific problems from the cardiac viewpoint

Acute myocardial infarction

In this day of early ambulation for most illnesses and operations, a word of caution should be given about acute myocardial infarction. It has been shown in dogs, that an acute infarction to the ventricular wall, produced by ligating a major coronary artery, takes four to six weeks to heal. This is supported by postmortem studies in humans, of infarctions examined at varying time intervals after the acute attack.

Further, there is a variation in the coronary vessel distribution to the myocardium. At the

American Heart meeting in April of this year in Cleveland, an interesting paper was presented on the pathogenesis of spontaneous myocardial rupture following myocardial infarction. Twenty ruptured hearts were studied by a special technic, consisting of injection and dissection of the coronary arteries, and compared to a control series of 104 nonruptured hearts following infarction. It was found that there was a uniform pathological finding in the ruptured hearts. There was a poor blood supply by collateral circulation and the fibrosis was entirely absent in at least the one area of rupture. Furthermore, they had found that the rupture usually develops between the fourth and the eleventh day after an acute infarction with a hypertensive patient. The other finding that was frequently present was excessive effort. Either persisting hypertension or the excessive effort always preceded rupture. Hence, the combination of a poor collateral circulation plus persisting hypertension and excessive effort is the combination of events which is apt to produce myocardial rupture. This occurs in about 10 per cent of the patients who die with acute myocardial infarction. Apparently, increased intraventricular pressure seems to be the critical factor in the development of this catastrophe. In light of this, the therapeutic management should involve no excessive exercise that can be avoided, particularly in patients whose blood pressure persists to be elevated. One would hasten to say that each case must be individualized. Certainly not every case of acute myocardial infarction must stay in bed four to six weeks. The management must be decided on the merits of the individual patient.

Shoulder-hand syndrome following myocardial infarction.

Following an acute infarction, in roughly 10 per cent of cases, there is pain and stiffness in the shoulders, neck, arms, and hand. This syndrome has been recognized since the time of Osler. More recently, it has been better defined. The mechanism is considered to be one of reflex neurovascular dystrophy, in which the vasomotor and trophic symptoms presumably result from reflex stimulation of the sympathetic nerve supply.

The syndrome has been divided into three phases. The first is manifested by pain, limitation of motion, and diffuse tenderness of the shoulder, with pain and stiffness of the hand and fingers. This usually comes on two to six weeks after the infarction heals, or it may be two to three months after the patient has left the hospital. It may last three to six months. In the second stage, the pain and swelling of the hand disappear, stiffness and flexion deformity of the fingers increase. There may be atrophy of the hand muscles and subcutaneous tissues. X ray reveals osteoporosis of the hand bones. The third stage may continue for months or lead to irreversible changes. Trophic changes are prominent, contractures may occur. It should be called to your attention that the above is the complete clinical picture. Most cases do not go through all these stages. It has been our experience that most are limited to the first stage. It also should be mentioned that there is no relation in the development of these symptoms to the severity of the infarction.

Treatment of this type of disability, at best, has been difficult. Various methods have been tried, including physical therapy, x-ray therapy, stellate ganglion block, and more recently, ACTH or cortisone. Various authors claim best results with different methods. In the past, physical therapy has not been highly regarded. We would like to point out that it may be very beneficial, that it should be started early, and that it should be continued in spite of apparent lack of improvement for several weeks or perhaps months. In the past year, we have had five cases which responded to physical therapy alone. One other case required manipulation of both shoulders and arms under anesthesia, a procedure which we have not seen recommended in the literature and which we hesitate to advocate, but in this case, it proved very beneficial. Within a few days after manipulation, the swollen stiff hands and shiny taut skin improved. From then on, improvement was rapid until all symptoms finally disappeared.

It should be pointed out that a number of these patients seemed to get worse in spite of any type of therapy, but we believe that physical therapy should be started early, and it may be that further progression of this disorder may be prevented.

Hypertension and hypertensive heart disease.

Physical therapy for this disorder has been advocated. Rest, baths of all kinds, electrotherapy (high frequency, diathermy), and spas in various resorts, have been recommended in the past. We believe that these have no value except for the psychosomatic value they may have in producing peace of mind and relaxation.

Congestive heart failure.

Special measures of physical therapy such as exercise, massage, baths, and electrotherapy, have little place in the treatment of congestive failure.

Massage of the arms and legs may be useful in stimulating peripheral circulation and preventing phlebothrombosis, which is the precursor of pulmonary emboli. General active and passive exercises during convalescence, after dyspnea and edema have disappeared, may help improve muscular tone and shorten convalescence.

Rheumatic Fever.

Physical therapy should not be used in the acute phase of active rheumatic fever. It should be pointed out that the early acute polyarthritis of rheumatic fever may be difficult to distinguish from other causes of acute rheumatism, especially rheumatoid arthritis. In the latter, physical therapy may be essential. One should wait until the diagnosis is definite before active treatment is started.

Patients with conditions requiring physical therapy who also have heart disease.

An example of this would be a patient with severe coronary disease who has had a cerebrovascular accident. In these patients physical activity should be within their functional capacity. An acute myocardial infarction and congestive failure takes precedence and must be handled first during the acute phase. Many of these people who have had these types of heart disease, have a very limited reserve and must be handled accordingly. The major emphasis I would put in this group is that the physical therapist should have some knowledge of the patient's heart disease and their functional capacity. It is difficult to be more specific, but that generalization should be made.

Cerebrovascular accidents

It is the internist or medical man who usually has charge of these patients before their attack, and also who usually manages the treatment.

(1) A few points in differential diagnosis would be of interest. It should be kept in mind that a brain tumor may occasionally simulate a cardiovascular accident. A gradually increasing disability may be caused by a brain tumor that comes on slower than a usual cerebrovascular accident, but may be a very rapidly growing tumor. Also a slowly progressive vascular disease may simulate the rapidly growing brain tumor. Occasionally this differential diagnosis may be very difficult. The help of the neurologist is enlisted.

(2) Paresis may occasionally simulate a cerebrovascular accident. Diagnosis can be made by spinal fluid serology and the help of a neurologist.

(3) A subdural hematoma may cause some difficulty. In these cases there is the history of injury, development of stupor, and a poorly defined neurological picture.

The frequency of different types of cerebrovascular disease is illustrated by a study of 329 autopsies at the Massachusetts General Hospitals in patients who have died of cerebrovascular disease.

(1) Arteriosclerosis and thrombosis account for about 41 per cent. These conditions are not necessarily fatal; they may have multiple thrombi; the spinal fluid is not bloody; pressure may or may not be elevated.

(2) Cerebral embolism accounts for 20.4 per cent.

(3) Cerebral hemorrhage 20.6 per cent. For practical purposes all of these patients die; coma comes quickly. The spinal fluid is bloody and death usually occurs within a few days.

(4) Encephalomalacia accounts for 12.6 per cent.

(5) Rupture of an aneurism with meningeal hemorrhage accounts for 5.8 per cent.

We wish to call your attention to the cerebral embolism group which accounts for about 20 per cent of vascular disease of the brain. These emboli have their origin from auricular fibrillation, subacute bacterial endocarditis, coronary occlusion or infarction with lateral wall thrombosis, and rheumatic heart disease, in that order of frequency. In this group of heart disease, the internist and cardiologist are aware of the possible complications. We do our best to prevent them, but in spite of this, attacks are bound to occur. With the development of the anticoagulant therapy and now cardiac surgery, inroads have been made to prevent this complication.

Treatment of cerebrovascular accidents in general should be as follows: During the acute stage, the patient should be turned periodically, at least every two hours, with the exception of one with subarachnoid hemorrhages, who should be kept quiet. Nourishment must be given either by tube feeding or by parenteral fluids, depending on the individual case. Tube feeding is preferable in people who tolerate poorly the parenteral fluids from the cardiac viewpoint. However, tube feeding has the disadvantage of predisposing to bron-

chial irritation, excessive mucus formation with its complications of atelectasis and pneumonia. Penicillin should be given prophylactically. In the past, a large number of people died of pneumonia. Bladder control is a difficult problem. Catheterization has its objections in that it causes bladder irritation and infection. We believe it should not be used if the bladder control will return in the first two or three days — during this time catheterization every eight hours if necessary but not at all if possible. If bladder control does not return, we are caught with the increasing incidence of skin breakdown and ulceration. For this reason we believe that catheterization in these cases is necessary. Finally, physical therapy should be started as soon as the danger to life is past. This cannot be overemphasized. A great number of patients can be improved or disability can be prevented, if adequate physical therapy is started early.

We would point out that there is a wide variation in the response of patients, no matter what is done. We have seen emboli from auricular fibrillation in cases of mitral stenosis, with a complete one-sided paralysis and aphasia, which have cleared entirely. It has been our experience that patients with emboli are apt to have less disability than those with intracranial primary vascular disease.

SUMMARY

We should like to emphasize again the following points: First, physical therapy has a vital role in rehabilitation in these days of gradually aging population and the manpower shortage. The internists have not used these facilities to their full advantage. We would strongly advocate close cooperation between modern physical therapy and internal medicine.

Second, a few general indications and contraindications for physical therapy were mentioned. A plea is made for accurate definitive diagnosis before treatment is started.

Third, we have discussed physical therapy and various cardiovascular diseases. We should emphasize particularly that physical therapy is of value in the shoulder-hand syndrome following myocardial infarction. It should be started immediately and continued for several weeks to months in spite of apparent lack of improvement at first.

Finally, physical therapy for cerebrovascular accidents should be started as soon as the immediate danger period is over.

*Fractures, Sprains and Strains in Industrial Disabilities**

Illarion I. Gopadze, M.D.

In fractures sustained by an industrial worker, the same principles of bone and soft tissue repair are followed as those in any other walk of life. Following reduction in as nearly anatomical opposition of the fragments as possible, one of the fundamental principles in treatment of any type of fracture is a complete and continuous immobilization until union is sound. Splints or casts must include joints above and below the fracture in order to maintain fixation of fragments. There are, however, exceptions as in the treatment of a fracture of the humeral shaft by a "hanging" cast. One must also keep in mind the age of the patient, since capacity of the growth of new tissue in older patients is slower than in younger adults. There also may be variations in the rate of repair in fractures of the same type and in patients of the same age and similar build.

Clinically diagnosed or suspected fractures must be x-rayed before and after reduction. The established habit of visualizing fractures will aid in better treatment and is important from the medicolegal aspect. In fractures of the lower extremities and of the pelvis caused by a fall from

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a height, the vertebral column must always be included in roentgenograms even though there are no subjective symptoms. If original films fail to demonstrate a fracture and subjective symptoms persist, x-rays must be repeated since several weeks later a fracture sometimes becomes demonstrable.

Slow uniting fractures are not to be considered "un-united" simply because union is incomplete within the usual or expected number of weeks or months. In these same individuals one must appraise their chronologic as well as their physiologic age. If vascularity of both fragments is free, union will be rapid; if the blood supply of one or both fragments is impaired, the union is delayed or may result in non-union. In any fracture, healing is initiated by granulation tissue between the fragments which requires not only adequate blood supply, but, in early days of repair, a frank hyperemia. This precept is so eloquently brought to our attention in fractures of scaphoid bone of the wrist. It is indeed a lack of understanding of this principle that allows the physician to send a patient with fracture of the scaphoid back to work simply because the normally allotted time for fracture repair has been maintained. The invariable degenerative changes of the fragment all too frequently result in disability and in loss of working weeks and months. Similarly, in fractures of the neck of the femur the process of repair may take from twelve months up to three years.

Since immobilization is the most frequent method in the treatment of fractures one has to guard against excessive splintage. Rigidity of the fingers may remain as a permanent incapacity if in a fracture of the wrist splints are extended over the fingers and it may require weeks and months to mobilize them again. Stiffness of the shoulder joint need not result because of the fracture of the forearm with immobilization of the elbow joint and the use of a sling. The patient should be encouraged to raise the arm over the head and extend it several times a day to prevent this disability.

Stiffness of the joints in excessive splintage is due to functional inactivity and disuse while muscular inactivity is responsible for venous and lymphatic stasis when accumulated serofibrinosus fluid forms capsular and intermuscular adhesions. Recurrent or persistent gravitational edema, as in fractures of lower extremities, is another cause for these adhesions. In these fractures it is important to bear in mind that the application of supportive dressings in initial stages of walking following removal of the splints will aid in earlier recovery of normal joint function. The dressings may include elastic supports, woven bandages, and, in some instances, more rigid supports may be preferable in the form of Gibbony type of strapping or Unna Paste Boot. For one to embrace the significance of this danger, one has to recall his experiences with dislocations of the knee or shoulder which leave only temporary stiffness. A simple joint injury, not complicated by functional disuse or by other sources of repeated exudation, does not cause serious or lasting stiffness.

At this point may I caution you about the general concept which states that if there are adhesions producing a stiff joint, manipulation will free it. It is true that manipulation will break the adhesions, but the very process gives rise to a new exudation from the torn fibers which may produce fresh adhesions. Manipulation must be deferred until range of motion is no longer increased by the patient's own active exercise. A careful day to day measurement of the range of motion should be kept by the physical therapist. If, however, it is decided to manipulate the joint, it must be done with complete muscular relaxation. The surgeon must keep in mind that the adhesion formation near joints is the result of repeated soaking with serofibrinous exudation and this exudate may be caused by disuse with immobility and edema or by repeated injury and passive stretching. Therefore, depending on the degree of the same process caused by manipulation, it may lead in its most severe form to so called Sudeck's acute post-traumatic bone atrophy.

It is imperative that active exercises be urged by the surgeon since muscles waste rapidly. This is particularly true in the quadriceps femoris muscle following knee injuries. When walking and weight bearing is resumed again, the proprioceptive mechanism is slow to respond due to muscular weakness, and the knee joint is left unprotected on the rough surfaces allowing additional stress on synovial membrane and ligaments. Effusion in the joint will recur and with swelling and effusion there will be more wasting of the muscle, thus a vicious circle is established. The muscles have little chance to redevelop by electrical stimulation; the patient must be reeducated in contracting his own muscles.

When fractures of extremities, particularly of the upper, are first seen the limb must be carefully examined for its blood supply before any attempt at reduction is made and the radial pulse must be felt. It is a well established fact that the arteries respond to injury by traumatic arterial

spasm. In supracondylar fractures of the humerus fragments may impinge the brachial artery and if occlusion is not relieved early Volkmann's ischaemaic contracture will result. Sensory nerves and muscle nerve endings show the greatest susceptibility to ischaemia and the muscle is the next most susceptible tissue. Skin can survive as long as twenty-four hours, but muscle tissue will die in six to eight hours if ischaemia persists. Regeneration of the muscle is limited and is replaced by fibrous tissue which contracts and shortens. If collateral circulation is not adequate gangrene will supervene. Although reflex vasospasm may cause ischaemic contracture in the upper extremities there is seldom the complete arrest of circulation necessary to cause gangrene, whereas in lower extremities this danger is greater. Veins similarly respond to injury by vasospasm. In case of such emergency vasospasm may be relieved by nonoperative measures such as paravertebral procaine injection of the sympathetic ganglia, brachial plexus block, or spinal anesthesia and if these measures fail, the artery should be exposed.

The scope of this presentation will not allow discussion of the fracture mechanism of individual bones, compound fractures, special fractures, skeletal traction or bone grafting. For the treatment of uncomplicated fractures it will suffice to enumerate a few principles necessary in order to obtain good results:

1. X-ray all fractures.
2. Reduce them in as nearly anatomical opposition and alignment as possible.
3. Immobilize in order to maintain reduction in a well padded cast or preferably in a padded plaster of Paris splint.
4. Repeat x ray following reduction.
5. Splint so as not to interfere with functional activity of the joints or circulation.
6. Mobilize early.
7. Rehabilitate.

In fractures, sprains, and strains, the greatest and most persistent factor responsible for the patient seeking medical help is pain in various degrees. Since not every office is equipped with a device to measure pain a surgeon of necessity must rely on his experience, his observation, and his ability to evaluate adequately subjective symptoms. Pain in many cases must receive consideration in estimating the time of temporary total disability.

A surgeon dealing with trauma must possess almost unlimited patience in his endeavor to restore these patients in the shortest possible time to their former usefulness and well-being as individuals or as a group. In this respect a well trained and conscientious physical therapist is an almost indispensable partner to the surgeon in his efforts to shorten the period of recovery and to restore post-traumatic patients to their occupations.

Our Book Reviewers for March

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Electromyography in the Practice of Physical Medicine

The Role of the Physical Therapist*

Miriam J. Partridge, B.S., and Arthur A. Rodriquez, M.D.

In 1948 electromyography was initiated in the Department of Physical Medicine and Rehabilitation at the University of Illinois Research and Educational Hospitals as a method of evaluating the effect of therapeutic electrical stimulation of muscles involved in poliomyelitis and peripheral nerve injury. At that time a few referrals for electromyographic studies were being made at the suggestion of the physiatrist. Some kinesiological studies were done also in the infancy of the program. Gradually the importance of electromyography as an adjunct to accurate differential diagnosis became apparent to an increasing number of services. The records of the department now show that in the past three and a half years, 513 electromyographic studies have been performed on 327 patients, 122 of which were diagnostic problems. In the first full calendar year, 72 electromyograms were performed, 108 in the second and 185 in the third demonstrating an increase of two and one-half times that of the first year. The equipment utilized for testing is the standard, four-channel electroencephalograph available on the open market and modified for electromyography. The equipment used and technics adopted have been described in detail elsewhere.†

When adequately trained, the physical therapist may play an important role in electromyography. At the University of Illinois, the physical therapist is not only responsible for the preparation of the patient, but in the absence of the physiatrist is also responsible for the calibration and operation of the equipment as well as the recording of the findings. Selection of electrode site requires considerable judgment and is based on preliminary manual muscle testing and electrical diagnosis. The number of tests performed could not have been accomplished without the assistance of a therapist trained in the highly specialized skills required. Responsibility for interpretation of the findings and their correlation with clinical examination rests with the physiatrist.

The basic principles of electromyography and the method employed for recording may be reviewed briefly as follows. When a striated muscle contracts, thermal, mechanical, chemical, and electrical changes occur. Electromyography concerns itself with the pick-up, amplification, indication, and recording of the action potentials associated with the functional activity of contractile tissues. Because of the minuteness of the electrical changes picked up by the electrode, they are amplified many times prior to recording. The unipolar needle electrode is used routinely except when surface electrodes suffice for the purpose of the examination. The needle is completely insulated except for the tip and is inserted directly into the belly of the muscle to be sampled at about 1 cm. from the indifferent electrode. For standardization the indifferent electrode is usually placed over the motor point. The paired surface electrode technic consists of two small silver cups which are filled with electrode jelly and secured to the skin overlying the muscle belly to be studied and are placed no closer together than two centimeters. This technic is suitable for gross pattern observations, but differential diagnostic studies aimed at detailed analysis of electrical activity require the use of needle electrodes.

As is well known, a motor unit is composed of a single anterior horn cell together with its axon and all the muscle fibers it innervates. It has been estimated by Clark that a single anterior horn cell innervates approximately 100-165

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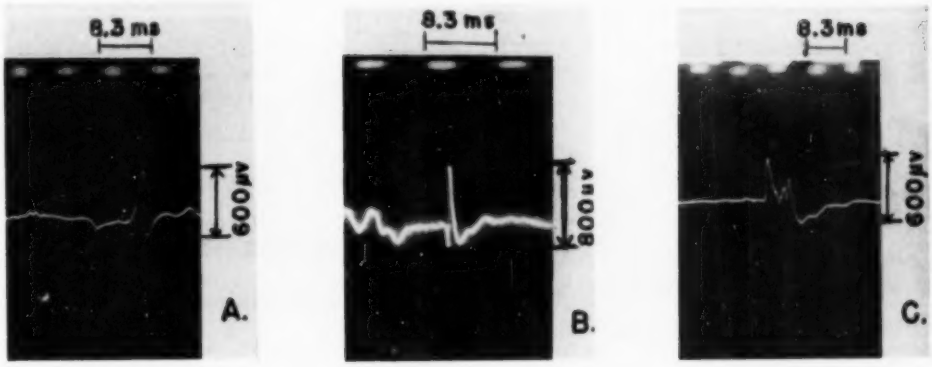
† "Researches in Electromyography," by H. Worley Kendell, Arthur A. Rodriquez, J. L. Murphy, and H. W. Pavella, *Archives of Physical Medicine*, December 1951.



Diphasic Potential *Triphasic Potential* *Polyphasic Potential*

Figure 1. Film record photographed from the oscilloscope demonstrating the various wave forms of action potentials as developed in normal and pathological muscles in man.

muscle fibers. Thus when a single lower motor neuron fires with sufficient magnitude all the muscle fibers innervated by that one unit will contract. The action potentials developed by a single motor unit vary in form as illustrated in Figure 1. The electrical activity in most instances as recorded by the monopolar needle electrode technic is diphasic or triphasic and occasionally polyphasic. This depends on the relationship of the pickup electrode to the source and sink of the action potential. Other important properties are the duration of the wave (measured in milliseconds), the amplitude (measured in microvolts), and the frequency at which it discharges. The action potential of a normal motor unit ranges in amplitude from 100-2000 microvolts.

In the normal subject, motor units fire asynchronously for the most part, at a frequency which is related to the amount of effort developed on the part of the subject. As more effort is put forth, an increasing number of motor units are recruited. Thus more muscle fibers contract to develop increasing tension. These two methods of augmenting work output are known as temporal and spatial summation. Logically, one would expect that the synchronicity with which motor units fire must affect the magnitude of the tension developed (preliminary interpretations of

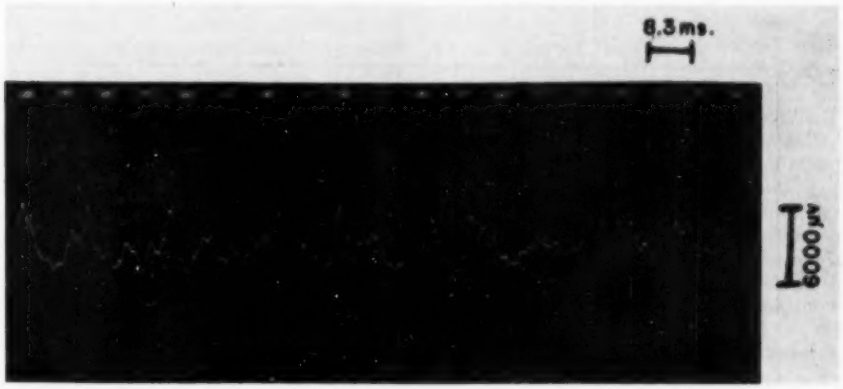


Figure 2. Film record photographed from the oscilloscope demonstrating the summation of action potentials as developed during maximal effort contraction of a normal biceps brachii.

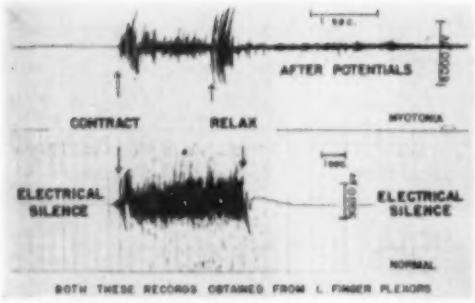


Figure 3. Crystograph tracing demonstrating typical pattern seen in myotonia congenita (top record) as compared to normal pattern (bottom record).

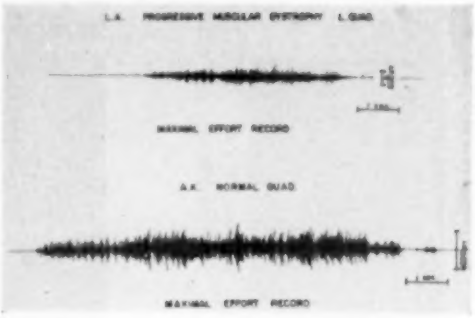


Figure 4. Crystograph tracings comparing records from normal subject and patient with progressive muscular dystrophy. Note difference in amplitude. Further differences in wave forms and potential duration are noted on the oscilloscope.

peak amplitude studies now under way in our department tend to confirm this) as well as the susceptibility to fatigue.

In normal maximal effort, discrete motor unit activity is no longer observed, but instead a summation of potentials (See figure 2). This has been termed the normal interference pattern. As the frequency of the motor unit firing is increased and an increasing number of units are recruited, action potentials are observed to be superimposed in such a way as to produce this characteristic pattern.

The normal muscle at rest causes no disturbance in the isoelectric base line as visualized on the cathode ray oscilloscope. This is referred to as electrical silence. However, in the presence of a lower motor neuron lesion, fibrillation potentials may be found. These are due to the spontaneous firing of single muscle fibers, a phenomenon which cannot be observed clinically. Fibrillation potentials may be monophasic or diphasic in form and are characterized by low amplitude (5-100 microvolts) and short duration (0.5-2.0 milli-seconds). This gives rise to a high-pitched clicking sound when converted to sound. In contrast, the single motor unit gives rise to a distinct low-pitched thumping sound. The polyphasic unit produces a rough, squeeky sound. When suitably amplified the development of minimal tension will give rise to audible sounds, although clinically there may be no evidence of muscle contraction.

Figures 3-6 illustrate characteristic patterns of electrical activity in representative neuromuscular disorders as observed at the University of Illinois. A typical pattern seen in Myotonia Congenita or Thomsen's disease is demonstrated in Figure 3. At the command to contract, the patient initiates the movement, but is apparently unable to recruit enough motor units to maintain initial voltages. At the command to relax, there is a tremendous burst of motor unit activity with some of these potentials attaining an amplitude of 6000 microvolts. Spontaneous after-discharges are observed on the oscilloscope (not evident in the crystograph tracing) as high frequency, low voltage potentials which give rise to audible sounds similar to diving airplanes. These quasi-musical sounds are so typical as to be pathognomonic of this disease. The bottom record is taken from the same muscle of a normal subject. This demonstrates electrical silence before the command to contract, maintenance of normal voltages throughout the contraction period, and electrical silence with no potentials after the command to relax. In Pseudohypertrophic Muscular Dystrophy an interference pattern occurs. It differs from the normal in several respects. The voltage output is much lower. This can be demonstrated readily by means of the crystograph recorder (See figure 4). Other differences, however, can be noted only by means of the oscilloscope. The majority of the potentials in most dystrophies, in our experience, have been of very short duration compared to the normal. As a matter of fact, they often have parameters of the magnitude of single fiber (fibrillation) potentials. They differ from denervation fibrillation in that they are under volitional control. Other potentials are polyphasic in form, and still others are of the usual diphasic or triphasic variety.

Represented in Figure 5 is a record obtained from a patient with a clinical diagnosis of Amyotonia Congenita. A severely reduced inter-

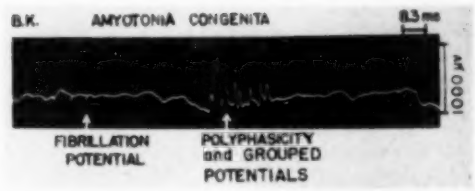


Figure 5. Maximal effort record taken from the quadriceps of patient with diagnosis of amyotonia congenita. Muscle strength at time of test was grade 2 (Lovett Method). This record was photographed from the oscilloscope by means of a continuous-run film at a speed of 24 inches per second.

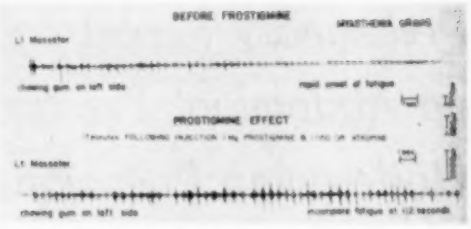


Figure 6. Crystograph tracing demonstrating the rapid onset of fatigue in the myasthenia gravis patient (top record) and the effect of prostigmine on the same patient.

ference pattern and low voltages are illustrated. In addition to these findings, these patients demonstrate spontaneously occurring fibrillation potentials and polyphasicity. In the Myasthenia Gravis patient, rapid fatigue and low voltages are characteristic findings when he attempts repetitive exercise or a sustained effort (See figure 6). After an injection of 1 mg. prostigmine, the patient has an increased ability to maintain effective voltages for a longer period of time. Electromyography is a satisfactory means for recording this phenomenon.

In addition to being of diagnostic value, electromyography is of great assistance in evaluating clinical progress, effectiveness of therapy, determining end point of treatment and assessing residual disability.

SUMMARY

The importance of electromyography as an adjunct to differentiating myogenic and neurogenic disorders has been discussed and electromyographic patterns characteristic of various neuromuscular disorders have been demonstrated. The evidence suggests that a department of Physical Medicine and Rehabilitation can and should offer electromyography as a diagnostic service available to the hospital as a whole. Experience indicates that physical therapists can play an important role in providing this service not only in the preparation of the patient for testing, but also in the operation of equipment, and recording of the findings for the physiatrist who interprets the electromyograms and makes the clinical correlation.

Appreciation is expressed for the criticisms and guidance of Doctor F. A. Hellebrandt, Head of the Department of Physical Medicine and Rehabilitation at the University of Illinois Research and Educational Hospitals.

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Preliminary Report on an Abdominal Exercise Procedure for Patients Undergoing Pneumoperitoneum

Wilma-Nell Harmony, B.S.

It is a well proven precept that selected exercises, when taken regularly at stated intervals, will develop and maintain muscle strength. With this theory in mind and fully cognizant that in dealing with tuberculous patients nothing must be done to delay or impair the arrestment of the tuberculosis, a program of minimal abdominal exercises was started for all patients, between the ages of 19 and 50 years, who were scheduled to receive pneumoperitoneum as a method for therapeutic pulmonary relaxation in the treatment of their tuberculosis.

Pneumoperitoneum is defined as the injection of air into the peritoneal cavity. A measured amount of filtered air, varying from 300 cc. to 1500 cc. is induced below the diaphragm by needle once weekly or every ten days depending upon the individual rate of absorption, for a period of from one to five years. It is a form of treatment designed to push the diaphragm upward thus causing the lung space to become smaller. The motion of the diaphragm is reduced as a consequence thereby providing for more rest and relaxation to the lung. Banyai has stated that if too much distention of the abdomen is permitted, it may nullify the elevating effect of the injected air upon the diaphragm. At the same time he suggests that a snugly fitting abdominal binder increases the rise of the diaphragm in addition to that caused by any given amount of air. Also, the distention of the abdomen is unsightly cosmetically, as well as expensive for the patient since it often necessitates a new wardrobe.

Consequently, rather than bind the abdominal muscles with a prosthetic appliance, which it was felt that the patient would discard when it became uncomfortable, a program of abdominal exercises was initiated. This was done with two objectives in mind, namely: the production of beneficial therapeutic results by preventing the distention of the abdomen thereby causing the air to be displaced upward rather than outward in the peritoneal cavity and, a gain in cosmetic value by assisting the individual to retain a normal appearing figure. Every patient under the age of fifty, who was scheduled to receive pneumoperitoneum in the cure of his disease, was referred to physical therapy at least one week (five treatment days) before his initial dosage of air was administered. Treatment was prescribed for each person by the physician in charge of the patient. Contraindications to treatment were set up to include all patients over the age limit, seriously ill patients, and those patients exhibiting any untoward reactions such as unusual shortness of breath, blackouts, fever, or physical handicaps which would have a bearing on the treatment.

As preinduction procedure the patient was weighed, his measurements at the umbilical girth and the transpyloric line (approximately three inches above the navel) were recorded, his picture was taken in profile against a posture chart, and instruction in three abdominal exercises were given with injunction to the patient to perform them once daily in his own cubicle and once daily under supervision in the physical therapy clinic. At the end of three months, if there had been no unfavorable reaction, the exercises were increased to four times each, and at the end of six months were increased to five times each. This meant that the patient performed nine exercises twice daily and progressively built them up to fifteen exercises twice daily.

The abdominal exercises given may be described as follows:

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Reviewed in the Veterans Administration and published with the approval of the Chief Medical Director. The statements do not necessarily reflect the opinion or policy of the Veterans Administration.

1. Lie in a supine position with the knees bent. Roll the pelvis to flatten the lower part of the back to the plinth. Raise both arms, head, and shoulders to a partial sitting position just clearing the spine. Lower back to plinth slowly.
2. Same starting position as # 1 but rotate the thorax as head and shoulders are lifted to a partial sitting position.
3. Same as # 2 but rotate the body to the opposite side.

Each exercise was performed very slowly and easily; at any notable increase in respiration the patient was instructed to relax until the breathing became normal before continuing the exercise. To rule out hip flexors a therapist held the knees of the patient during the performance of the exercise. The exercises were continued daily, except on pneumoperitoneum induction day, for a period of from two to twelve months. A check on the abdominal girth and weight was made monthly.

The results of work done with an experimental group of 51 patients are being reported in this paper. During the course of a year 79 patients were sent to physical therapy for preorientation and instruction in the abdominal exercise routine. However, a total of 28 patients were discontinued before a month had elapsed due to; (1) refusal to exercise (7 patients), (2) a change in clinical status which contraindicated the continuance of exercises (7 patients), and (3) hospital dispositions (14 patients). Of the 51 patients, 90 percent were males of varied race extraction; 78 per cent were white with equal division of negro, oriental, and Filipino in the remaining per cent. The ages ranged from 19 to 50 years with the greatest percentage in the 26 to 33 year age bracket.

The statistics on the experimental group are contained in Table 1. The entry, "per cent of visits" was determined from the ratio of the number of visits a patient made to the clinic for exercise to the number of visits he could have made. Although of questionable validity, it is assumed that this is an index of the group's conscientiousness in following the exercise program.

The relationships between (1) initial weight and initial girth measurements, (2) final weight and final girth measurements, and (3) change in weight and change in girth measurements were statistically significant at less than the .001 level of probability as determined by the Chi-square test. The Chi-square test of relationship between per cent of visits made and change in girth measurement was not statistically significant. The differences between the means of the (1) initial and final weight measurements and (2) initial and final girth measurements were not statistically significant as measured by the critical ratio technic.

These results indicate, first of all, that this group is probably no different from any random sample of individuals in that weight and girth are related, and, furthermore, that a change in weight is accompanied by a corresponding change in girth. Of importance to this study is the fact that there was no significant change in the group with respect to the pre-exercise and post-exercise measurements. As can be seen from Table 1, however, there was a *tendency* for the girth to increase more than would be expected from the weight increase, and the group at the end of treatment tended to be more homogeneous with respect to girth measurement.

The statistics gathered thus far throw no light on whether or not girth increase can be held to a minimum by exercise. Therefore, the study is being continued with the inclusion of a control group which will take no exercise, and a second experimental group which will receive exercise once weekly.

TABLE 1

	Mean	Standard Deviation
Weight		
initial	141.8	22.7
final	142.3	22.4
difference	+0.5	5.2
Girth at navel		
initial	32.0	4.3
final	33.5	3.1
difference	+1.5	1.9
Girth at transpyloric line (approximately 3" above the navel)		
initial	33.0	3.5
final	34.3	2.9
difference	+1.3	1.6
Ratio of visits (actual/possible x 100)	78%	5%

(The figures represent weight in lbs. and girth in inches)

The author wishes to express her deep appreciation to Dr. Roger Bardsley, Clinical Psychologist, for computing and interpreting the statistics for this paper.

REFERENCE

Banyai, Andrew L., M.D.: Pneumoperitoneum Treatment, C. V. Mosby Co., St. Louis, Mo., 1946.

Editorials

When you are asked, "Are you a member of the American Physical Therapy Association?" you answer proudly, "I am!" Why are you proud? There are several reasons for this feeling. Educational standards, professional relations with allied groups, legislative guidance, and recruitment programs are a few of the issues which have been ably directed in the past. Attendance at our National Conference illustrates the administrative ability and guidance we as a group receive from our National and Executive officers. Have you stopped to think of the endless chain reactions we set up at each annual convention? You, as a member or delegate, bring problems which your Association accepts. Committee efforts then are integrated and directed toward the solution of your problem.

Now to be practical! Money is required to run any organization! Dues are not sufficient. Funds in addition to current grants for special services are needed to carry on the Education, Recruitment, and Exhibit programs planned by your committee chairmen. Aside from their routine committee responsibilities all are coordinating their efforts toward supplying the demand for more physical therapists.

Isolated from state or national offices and carrying a heavy schedule, you ask, "How can I help?" Every day you are representing the American Physical Therapy Association with all of its inherent standards and philosophies. You can incorporate these ideals into your contacts with your patient, the allied professional worker, lay groups, and your friends. Thus you are educating and interesting others in the value of our service, and through these contacts, you may be led to the philanthropic groups who can help us in financing our expanding programs in Recruitment, Education, and Public Relations.

To guide our efforts, a Ways and Means Committee was established last June at the Conference to plan a long range program of fund raising. In this common problem of ours here are a few steps all of us can take as the program is being initiated.

Think of possible philanthropic groups or individuals who are able to finance a local need such as recruitment or education projects.
Think of any friend or lay person who has entree to the large civic groups.
Direct our thinking toward national as well as local financial needs.

Fund raising on a national level will be presented to you at conference time.

Dorothy Fredrickson,
Chairman, Ways and Means Committee

WORLD CONFEDERATION FOR PHYSICAL THERAPY *News*

Intermediate Scientific Program — First International Congress

(THEME: The Patient's-Own Activity as the Underlying Principle of Physical Therapy)

Sunday, Sept. 6

10:30 a.m. **Service in St. Paul's Cathedral**

2:00 — 9:00 p.m. Registrations in the Restaurant of the Central Hall, Westminster, London. (Entrance in Tothill Street.)

Monday, Sept. 7 **Physical Therapy in Neuromuscular Disorders**

11:30 a.m. "The Pathology of Lower Motor Neuron Disturbances in Relation to Treatment." Lecture by Herbert J. Seddon, C.M.G., M.A., D.M., F.R.C.S., Clinical Director Royal National Orthopaedic Hospital, London, England.

2:00 p.m. "Proprioceptive Facilitation Therapy for Paralysis."
Lecture by Herman Kabat, Ph.D., M.D., Medical Director of the Kabat-Kaiser Institute for Neuromuscular Rehabilitation, Vallejo, California, U. S. A.

3:30 p.m. Demonstration by Margaret Knott, Chief Physical Therapist, Kabat-Kaiser Institute for Neuromuscular Rehabilitation, Vallejo, California, U. S. A.

Tuesday, Sept. 8 **Physical Therapy in the Rheumatic Diseases**

9:30 a.m. "The Physiotherapist and the Arthritic Patient."
Lecture by Hugh Burt, M.S., F.R.C.P., Director of the Department of Physical Medicine, University College Hospital, London, England.

11:00 a.m. "Fibrositis and Nonarticular Rheumatism."
Lecture by Wallace Graham, M.D., M.R.C.P. (London), F.R.C.P. (C), Assistant Professor of Medicine, Faculty of Medicine, Toronto University, Canada, and Chairman of the Canadian Arthritis and Rheumatism Society.

2:30 p.m. Films and demonstrations at Central Hall, Westminster.
Study visits to hospitals, rehabilitation centers, and factories where physical therapy departments will be on view.

Wednesday, Sept. 9 **Physical Therapy in Diseases of the Chest**

9:30 a.m. "The Value of Physiotherapy in the Treatment of Diseases of the Chest."
Lecture by Sir Clement Price Thomas, F.R.C.S., Surgeon at Westminster Hospital and Brompton Hospital for Diseases of the Chest, London, England.

11:30 a.m. Demonstrations of patients undergoing treatment by physical therapists.

2:30 p.m. Films and demonstrations at Central Hall, Westminster.
Study visits to hospitals, rehabilitation centers and factories as on previous day.

Thursday, Sept. 10	**Papers by Physical Therapists on Treatment and Research** (Reports of study and experience by physical therapists)
9:30 a.m.	Papers by physical therapists from different countries: Amputations; Paraplegia; Peripheral Nerve Lesions; Recent Injuries; Relaxation for Psychopathic Disorders; Antenatal Training (exercises for maintenance of muscle tone); Cerebral Palsy; Gait Analysis; Head Injuries; Poliomyelitis; Diseases of the Chest.
3:00 p.m.	Second General Meeting of the World Confederation for Physical Therapy.
Friday, Sept. 11	**Physical Therapy in Industry**
9:30 a.m.	"Physical Therapy in Industry, with Particular Reference to Sudeck's Atrophy." Lecture (with film) by L. W. Plewes, M.A., M.D., F.R.C.S., Surgeon-in-Charge of Accident Services and Director of Rehabilitation at the Luton and Dunstable Hospital, England.
11:30 a.m.	"Posture in Industry." Symposium by Physical Therapists from Denmark, Norway, and Sweden.
2:30 p.m.	"The Medical Approach to the Resettlement of the Disabled." Introductory talk by F. S. Cooksey, O.B.E., M.D., M.R.C.P., Director of the Department of Physical Medicine, King's College Hospital, London, England, and Consultant Adviser in Physical Medicine, Ministry of Health. "The Part Played by the Disabled Ex-Serviceman in His Own Rehabilitation and Resettlement." Lecture with film by Kurt Jansson, Director of Rehabilitation of the World Veterans' Federation, Paris.
4:00 p.m.	Films
5:00 p.m.	Closing Ceremony at the Central Hall, Westminster.

Social Events

The following social program has been arranged for Full Members and Associate Members:

Monday, Sept. 7	Receptions by Official Bodies
Tuesday, Sept. 8	Overseas visitors will be the guests of the London Branch of the Chartered Society of Physiotherapy for an evening trip on the River Thames to the Tower of London to watch the Ceremony of the Keys. Reception in the Great Hall of the British Medical Association.
Wednesday, Sept. 9	Evening Reception given by the Council of the Chartered Society of Physiotherapy at Guildhall, in the City of London. Guests will be received by the Lord Mayor of London and the Lady Mayoress. The Civic life of London has centered round Guildhall for more than a thousand years, and portions of the present building date back to the early years of the fifteenth century. The Crypt was begun in 1411 and the Great Hall was completed in 1440.
Thursday, Sept. 10	Cocktail party given by the Trustees of the Ciba Foundation for the Promotion of International Cooperation in Medical and Chemical Research. Evening Reception given by the Chartered Society of Physiotherapy in Apothecaries' Hall, in Black Friars Lane, London (by kind permission of the Master and Wardens of the Society of Apothecaries). This Hall, originally the guest house of the Black Friars Priory, was purchased by the Society of Apothecaries in 1632. It was destroyed in the Great Fire of 1666, but was rebuilt immediately; it is one of the very few Livery Halls in the City of London which survived the 1940-41 bombing.
Friday, Sept. 11	Dinner and Dance at the Park Lane Hotel, Piccadilly, London. Tickets, price £1 10s. each, may be purchased on registration in London, or the money may be sent with the Congress registration forms.

Note — Additional entertainment is being arranged for Associate Members.

Owing to the many members expected at the Congress it is regretted that some restriction will have to be placed on the numbers who can attend these functions.

Final Program

The Final Program of the Congress will be distributed at the Central Hall, Westminster, when the Congress opens. A translation into French of all the lectures will be available also.

Dress

Dress will be informal for all functions except the Receptions at Apothecaries' Hall and Guildhall and for the Dinner and Dance, at which it is hoped that evening dress will be worn.

Congress Registration Fees

	£	s.	d.
Full Members	3	13	6
Associate Members (i.e., persons not physical therapists, accompanying members)	2	12	6

The above fees will apply only to registrations received before March 1, 1953, after which date the following fees will apply:

	£	s.	d.
Full Members	4	14	6
Associate Members	3	13	6

Members who have enrolled, but who are subsequently unable to attend the Congress will, if possible, have their registration fees refunded less 20 per cent, providing their cancellations are received by August 10, 1953.

Trade Exhibition

The whole of the ground floor of the Central Hall, Westminster, will be devoted to an exhibition of electro-medical and other apparatus of interest to physical therapists. Applications for space should be made to:

The Organizing Secretary
Physical Therapy Exhibition
55 Romney Street
London, S.W.1., England

Study Courses

Two short study courses have been arranged in the week before the Congress: Wednesday, Thursday, and Friday, September 2, 3, and 4, 1953.

(a) Three-day course on diseases of the chest at Brompton Hospital and Harefield Hospital.

(b) Three-day course on rehabilitation after amputation at Queen Mary's Hospital, Roehampton.

The numbers who can attend these courses are limited and physical therapists are asked to state, if possible when sending in their enrollment forms for the Congress, which if either course they wish to attend and to enclose the fee of £2 12s. 6d.

The National Society for
Crippled Children & Adults, Inc.
11 S. LaSalle St., Chicago 3, Ill.

Association Activities

Judges Chosen for POSTER CONTEST

Judges who will select the winning recruitment poster design are particularly well qualified to choose the most effective entry to focus nation-wide attention on the need for physical therapists.

Miss Patricia Ann Tickell is Convention Advertising and Exhibit Manager of the Girl Scouts of the United States of America; Mr. Don Harrington, artist and designer, is well known for his prize winning entries in the National Tuberculosis Association's annual Christmas Seal Contest; Miss Gale Tucker, a senior of Scarsdale High School, was chosen for her wide interests and ability to represent the high school student's point of view; and Miss Barbara Ann King, a student member of the American Physical Therapy Association, was selected by the physical therapy class at Columbia University to represent the student member interest.

Miss Mildred Elson will represent the Association members. In addition, Mr. Saul Lehman, President of the Georgian Press, Inc., which will print the posters, will be consulted as technical advisor.

Contributions to the World Confederation for Physical Therapy

Pennsylvania Chapter	$25.00
Maryland Chapter	20.00

World Confederation for Physical Therapy Congress

Have you made your plans for London and the World Confederation Congress? If not, why not do so *now*? Combine a holiday with the stimulation you will receive at the meeting. You will make friends with colleagues from many countries. All travel thereafter becomes more meaningful and interesting since you are with friends.

See this issue for further details.

Hazel Hoak

Word has just been received of the death in June of Miss Hazel Hoak, who had been a member of the Northern California Chapter of the American Physical Therapy Association since 1927.

At the time of her death in Los Angeles she was on vacation. For the past twenty-five years she had been employed by the Sisters of Mercy Order in their San Francisco Hospitals — St. Mary's and Notre Dame.

Blood for Polio

The following release from the American National Red Cross should give added incentive to all physical therapists to donate much needed blood.

As you know three of our members played significant parts in the experiments using gamma globulin: Miriam Jacobs, Carmella Gonella, and Ann Harmon. Resolve to give a pint of blood this month.

Red Cross Collects Blood For Fight on Polio

New hope for children exposed to polio is flowing into thousands of Red Cross blood bottles across the nation. The Red Cross has undertaken a dramatic expansion of its blood collections to make available for prevention of paralysis from polio all the gamma globulin that can be obtained from limited present processing facilities.

Recent experiments sponsored by the National Foundation for Infantile Paralysis and using globulin provided by the Red Cross have demonstrated that gamma globulin, produced from the pooled blood of many persons, contains antibodies that attack one or more of the three strains of polio virus so far discovered. A dose of the serum, which requires approximately one pint of

blood to produce, protects against the paralyzing effect of polio for about a 1 to 5-week period.

Last November the Office of Defense Mobilization asked the Red Cross to expand its blood collections to produce as much gamma globulin for all purposes as blood processing laboratories can turn out. Past experience indicates that the disease will reach epidemic proportions in about 150 counties and that some 2,000,000 children may be exposed to it.

The Red Cross *also* must continue to collect blood to meet the needs of civilian hospitals, of the Korean-wounded, and of the nation's plasma reserve. The total program will require approximately 5,000,000 pints of blood and will cost the Red Cross about $18,000,000 next year.

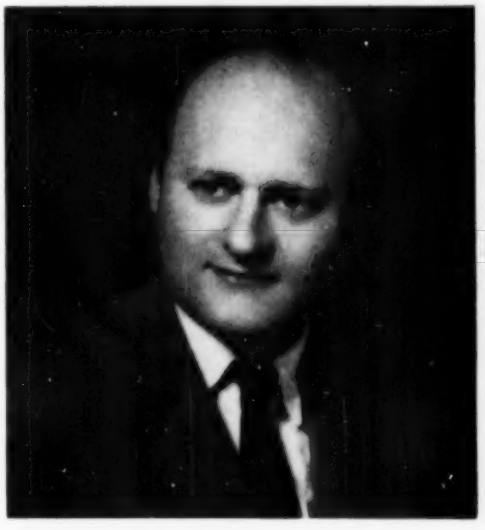
The Red Cross will not allocate or distribute the globulin.

Since the amount of globulin needed will far exceed the expected supply, its allocation and distribution will be handled by an agency other than the Red Cross. The agency will be designated by the Office of Defense Mobilization.

This project is only one of many Red Cross activities and the money only a portion of the much-needed $93,000,000 to carry on the humanitarian efforts of the American Red Cross. The American National Red Cross, Washington 13, D.C.

Meet Your Advisory Council

Charles S. Wise, M.D.



Charles S. Wise, M.D., is Director of the Department of Physical Medicine and Rehabilitation at the George Washington University Hospital, Washington, D. C., and Professor of Physical Medicine and Rehabilitation, the George Washington University School of Medicine. Dr. Wise holds the degree of B.S. from New York University and his M.D. was awarded by the New York College of Medicine in 1939. He is a Diplomate of the American Board of Physical Medicine and Rehabilitation and a consultant in his specialty to Walter Reed Army Hospital, the U. S. Public Health Service, and attending physician to Mt. Alto Veterans Administration Hospital. He is a member of numerous societies and committees directly concerned with the nation's health problems and further evidence of his abilities and interest is his membership in 1952 on the Task Force for the Handicapped of the Office of Defense Mobilization.

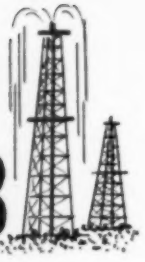
Dr. Wise has published numerous articles on physical medicine and is the author of the chapter on Heat and Cold in the third edition of Physical Medicine in General Practice by William S. Bierman.

He has always had a sympathetic understanding of the physical therapy profession. We are assured of his continued support and reliable guidance as a member of our Advisory Council.

CONFERENCE ★ 1953

BAKER HOTEL

Dallas, Texas • June 14-20, 1953



Business Meetings and Program Schedule

June 12th and 13th	Executive Committee Meetings
June 14th	
11:00 a.m. to 5:00 p.m.	School Section
5:00 p.m. to 9:00 p.m.	"Ice Breaker" — Texas Chapter, Host
June 15th	**Opening Session**
9:00 a.m. to 12:00 noon	Subjects and Speakers to be announced
2:00 p.m. to 5:00 p.m.	House of Delegates
6:00 p.m.	Barbecue and Rodeo
June 16th	
9:00 a.m. to 12:00 noon	House of Delegates
12:15 p.m. to 1:45 p.m.	Nieman-Marcus Style Show and Luncheon
2:00 p.m. to 5:00 p.m.	**Symposium** "The Patient — His Evaluation and Program for Rehabilitation." Coordinator, Josephine Buchanan, M.D., Chief of Rehabilitation, Division of Chronic Disease and Tuberculosis, U. S. Public Health Service; Chief Physical Medicine and Rehabilitation, Gallinger Municipal Hospital; Assistant Professor, Clinical Physical Medicine, George Washington University Medical School. Participants: Physical therapists, medical social worker, vocational guidance counselor, physiologist, and psychiatrist.
8:00 p.m.	Movies
June 17th	
9:00 a.m. to 12:00 noon	Continuation of Symposium
12:30 p.m. to 2:30 p.m.	Advisory Council and Executive Committee luncheon and meeting
3:00 p.m. to 5:00 p.m.	Standing Committee Meetings Chapter Chairmen and National Committee Chairmen
6:00 p.m. to 7:15 p.m.	Reception
7:30 p.m.	Annual Banquet
June 18th	
9:00 a.m. to 10:30 a.m.	House of Delegates
11:00 a.m. to 12:00 noon	To be announced.
2:00 p.m. to 5:00 p.m.	**Research Papers**

June 19th and 20th

All day Friday and Saturday morning	Instructional Courses — tentatively: respirator patients, cerebral palsy, assistive devices, supervision, pediatrics.

A recess will be scheduled each morning and afternoon to visit exhibits.

Facts About the Conference

Hotel

The Baker Hotel is air-conditioned throughout from lobby to roof.

Rates

Are from $5.00 for a single room with bath for one, double-room with double bed from $7.00, twin bedroom from $8.50, parlor suites from $23.00. The hotel will furnish information on dormitory rates for four or more on request.

Reservations

Reservation cards will be sent out with the dues notices and a reservation form will be printed in the next issue of the *Review*. Those who plan to room together should send in only one reservation including names of all roommates. The number of singles in any hotel is limited and, when exhausted, roommates will be assigned by the Hotel.

Registration

Active and Inactive members — $5.00

Student members — $2.00

Physicians, occupational therapists, nurses, medical social workers, vocational guidance counselors, and qualified physical therapists from other countries — no fee, but professional membership cards must be presented to register and attend.

Physical therapists who are graduates of approved schools but not members of the Association may attend the general sessions on introduction by a member and paying a registration fee of $15.00. Advance registration cards will be sent out with the dues notices. If you do not register in advance you must present your membership card for registration.

Instructional Courses

On Friday, June 19, and Saturday morning, June 20, instructional courses will be offered to members only. A member may attend only one course. Tuition, if registered at the conference — $5.00.

Instructional course alone — $10.00. Members may register in advance. Space in each course is limited and will be assigned in the order applications are received. As each course is filled, alternate assignments will be made in respect to requests.

Exhibits

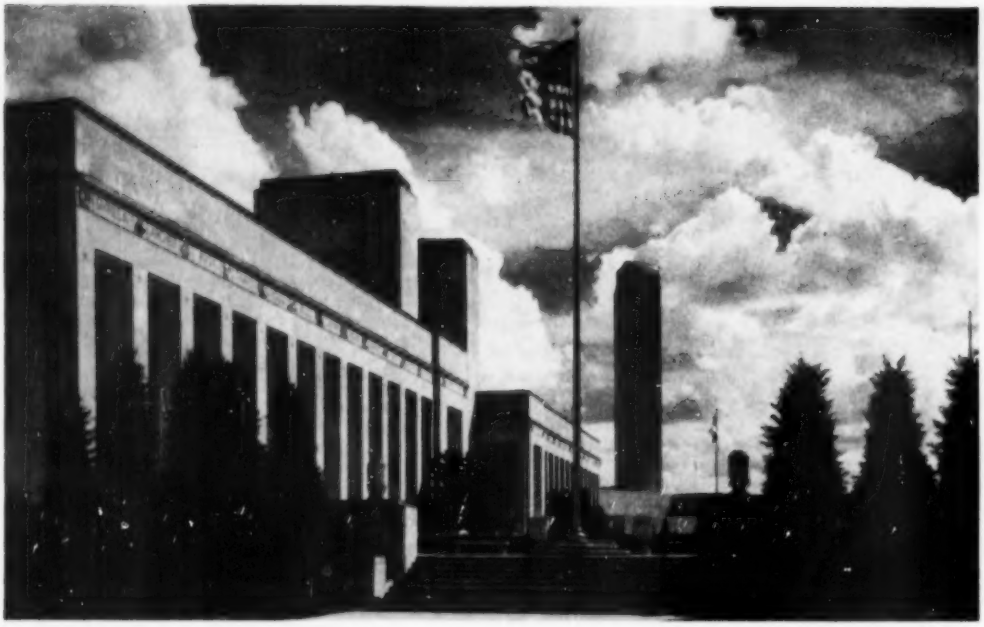
Exhibits again will be under the management of Gordon M. Marshall of Chicago who has already sold a number of booths to technical exhibitors. An increased number of chapter and scientific exhibits is anticipated and all exhibits will be of particular interest to those attending the conference.

Post Conference Tours

It will be possible for persons to arrange post conference tours to Mexico. The National Railways of Mexico suggests leaving Dallas on Friday night, June 19th and returning to San Antonio Sunday afternoon, June 28th. This tour provides for arrival in Mexico City Saturday evening; excursions out of the city with drives to Puebla, Xochimilco and Tasco are included in the five day stay.

Costs per person range from $133.27 for a coach seat to $195.74 per person for two in a compartment. These costs include in addition to rail fare, hotel accommodations in Mexico City and Tasco, sightseeing trips and all meals in Mexico City and vicinity. Not included, are meals on board the train or personal expenses.

Details regarding this tour may be secured from your chapter president or by writing Mr. F. Alatorre, General Agent, National Railways of Mexico, 2401 Transit Tower, San Antonio 5, Texas.



Courtesy of Dallas Chamber of Commerce

THE TEXAS HALL OF STATE *is a shrine honoring the heroes of the Lone Star State. Located on the grounds of the State Fair of Texas at Dallas, it is open the year round.*

Destination — Dallas

For All A. P. T. A. Members in 1953

Fun and Recreation

In the Dallas area entertainment can be found for all. Sight-seeing tours are being arranged by a local committee and there are many "musts" on the list.

Events of the week of June 14 will find the State Fair Musicals at the State Fair Auditorium receiving top billing. This is worth an evening of your time if only to acquaint you with Fair Park, where numerous Dallas functions are held. At night before the theatre's 8:30 performance, the "Midway" provides the thrills and chills of the amusement park. The Aquarium presents its representative group of aquatic animals, including those of the Southwest, while the Museum of Natural History offers its outstanding exhibits.

Other places of interest include the Dallas Museum of Fine Arts, the finest in the Southwest; an educational exhibit at the Dallas Health Museum; and the Texas Hall of State. All will reward you for the time spent in visiting them. Sports fans will wish to make a tour of inspection of the world famous Cotton Bowl, but every visitor will want to see the permanent buildings on the Fair grounds, many of which are constructed of beautiful native marble. This is the world's largest Fair, with an annual attendance of over two million people.

Leaving the Fair Park, those who are visiting Dallas for the first time will wish to see the campus of Southern Methodist University located in North Dallas with its picturesque Dallas Hall, and the beautiful building of Perkins School of Theology.

Marsalis Park and Zoo in South Dallas is easily accessible to downtown Dallas, as are the downtown theatres. One of these, the Melba, presents current road shows of the legitimate stage; while at the Coronet in North Dallas there are revivals of old and popular films, and showings of exciting foreign films.

The Dallas-Fort Worth area will provide a "Hillbilly Round-Up," a unique evening's entertainment with hillbilly entertainers and dancing.

The Dallas area has many interesting night

spots. Among these is Pappy's Showland, with its tables arranged in amphitheatre style, its dance floor, removable canvas roof, and headline vaudeville acts. The Century Room of the Hotel Adolphus features dining and dancing to name bands and a dance floor which recedes to allow the presentation of a superb Ice Revue. The beautiful Baker Hotel Mural Room has dancing nightly with top name bands and entertainment.

To return to sports—Burnett Field is the home of the Dallas Eagles, Champions of the Texas League, 1952. If home games are scheduled, baseball fans will have an opportunity to enjoy Texas League baseball.

MARION BOYER
Public Relations Committee

It's wise to be fashion wise—plan to attend the Neiman-Marcus style show and luncheon sponsored by the Texas Chapter.

Like the casualness and friendliness of the West? Watch this column for more information on the "Western Night" we have planned for you.

Motion Pictures

Time has been set aside for showing motion pictures and slides which would be of interest to physical therapists. Any members or organizations who have movies, slides, or film strips to show at the Annual Conference may apply for inclusion in the program to the American Physical Therapy Association, 1790 Broadway, New York 19, New York. All applications must be filed by April 1, 1953.

All applications should contain the following information:

1. Title and brief description of the subject matter covered
2. Length of film and time needed to show it
3. Size of film — 8, 16, or 32 mm; silent or sound; black and white or colored
4. Number of slides and time needed to show them
5. Size of slides — 2 x 2, or 3 x 4; kodachrome or black and white
6. Name of organization and individual responsible for material

The Program Committee will select those films and slides which in their judgment will be of greatest interest to the audience and which will fit into the time allotted. Only films and slides thus selected will be shown.

Membership News

Marriages

Norma Hansen of Watertown, N.Y., now Mrs. Norma H. Marshall, Watertown, N.Y.
Nancy Sterner of Penfield, N.Y., now Mrs. Nancy S. Sweetland, Penfield, N.Y.
Helen Chatelain of New Orleans, La., to Charles del Corral, Jr., New Orleans, La.
Mary L. Freehling of Maywood, Pa., now Mrs. Mary F. Boyd, Philadelphia, Pa.
Carmen Stoltz of Anchorage, Alaska, to Kenneth E. Montgomery, Anchorage, Alaska.
Birdie McCutchen of Harlingen, Texas, to Robert Stout, Harlingen, Texas.
Norma Belle Singer of Albany, N.Y., to Dr. Bernard Beatman, Albany, N.Y.
1st Lt. Doris Jane of Honolulu, Hawaii, now 1st Lt. Doris J. Aiken, Honolulu, Hawaii.
Viola McCormick of Detroit, Mich., to John Stoick, Detroit, Mich.
Joseph A. Rock of Washington, D.C., to Barbara Ann Tatem, Washington, D.C.

University of Southern California

A fine television program, "Physical Therapy and Polio," was presented to the Los Angeles area by the physical therapy school of the University of Southern California, January 25, 1953.

It was a half-hour program, planned by Lillian Chabala and Mrs. Roxie Morris with the approval of the Department of Development of U. S. C. Miss Chabala, chapter corresponding secretary, did the narration with Mrs. Morris, chapter president, doing the demonstrations. Muscle testing, electrical stimulation, exercises and gait training were explained and demonstrated on a polio patient. A short film, which was planned and photographed by Kenneth Goaloos, a senior physical therapy student at the University, featured the University of Southern California Student Health Center Physical Therapy Department. It introduced the viewers to massage and the various apparatus used in physical therapy.

This program not only explained to the public what physical therapy does, but also told of the education necessary to become a qualified physical therapist, and the acute need in the field. This provided both school and chapter publicity of which we all are proud. Congratulations are in order for the school staff and members who planned the program.

General News

Kurt Jansson Selected to Head United Nations Rehabilitation Unit

Kurt Jansson of Finland has been appointed to the post of Director of the Rehabilitation Unit of the United Nations Division of Social Welfare. Mr. Jansson, who has served during the past year as Director of Rehabilitation for the World Veterans Federation, with headquarters in Paris, will assume his new duties in January.

A graduate of the University of Helsinki, Mr. Jansson held important positions in activities for the physically handicapped in Finland prior to joining the World Veterans Federation. He was Chief of the Rehabilitation Division of the Disabled Ex-Servicemen's Association until 1945, when he was appointed Director of the Office of Vocational Rehabilitation in the Finnish Ministry of Social Affairs. In 1947 he accepted the position of Executive Director of the Disabled Ex-Servicemen's Association of Finland and remained in that post until 1951.

Mr. Jansson studied services for the physically handicapped in the United States in 1950 under a fellowship provided by the United Nations and has travelled extensively in Europe and other parts of the world in connection with his work for the disabled.

The UN Rehabilitation Unit is responsible for coordinating the activities of the United Nations and those of the Specialized Agencies interested in services for the disabled. Acting on a resolution adopted by the Economic and Social Council in 1950, the United Nations, including the UN International Children's Emergency Fund, has joined with the World Health Organization, the International Labour Organization, the United Nations Educational, Scientific, and Cultural Organization, and the Food and Agriculture Organization in the development of a coordinated international program for the rehabilitation of the physically handicapped. A working party composed of representatives of these organizations met at the UN Headquarters in New York, February 11 to 13, to plan the further development of the program.

Mr. Jansson succeeds Dr. J. D. Kershaw of the United Kingdom, who served as the first Director of the United Nations program for the rehabilitation of handicapped persons. Mr. Ernest Jorgensen of Denmark is responsible for the activities in the United Nations program which are related to the rehabilitation and welfare of the blind.

World Medical Association First Western Hemisphere Conference

Dr. Howard A. Rusk, chairman, professor and director of the Department of Rehabilitation and Physical Medicine of the New York University College of Medicine, will be guest-participant in panel discussions at the First Western Hemisphere Conference of the World Medical Association at Richmond, Va., April 24, 1953.

The sessions will provide opportunity for a discussion of current medical problems between representatives of the national medical societies of Latin America and United States specialists and practitioners. Dr. Louis H. Bauer, president of the American Medical Association and secretary-general of the World Medical Association, will moderate at a general session at which panel reports will be made.

Dr. Rusk will contribute a chapter on recent advances in physical medicine and rehabilitation to a volume commemorating the conference. He is a Diplomate of the American Board of Internal Medicine, a member of Alpha Omega Alpha and Fellow of the American College of Physicians. A graduate of the University of Pennsylvania Medical School, Dr. Rusk is head of the Department of Rehabilitation, Bellevue Hospital, as well as consultant in medicine and rehabilitation to the Veterans Administration and the United Nations.

Grants Announced for Research and Professional Education

The National Foundation for Infantile Paralysis announced the approval of research and professional education projects totalling $2,586,271, which took effect January 1, 1953. The awards go to 32 medical schools, hospitals, research institutions and educational organizations. With the exception of one institution in Canada, all of the grantee organizations are located in the United States.

Of the total authorized, $1,585,465 was allocated for research seeking prevention of the disease and improved methods of treatment, and $1,000,306 for programs in professional education.

This action brings to over $40,000,000 the amount provided in March of Dimes funds since 1938 for the study of medical care problems, aid to professional education and the support of polio research. Since 1938 the organization has expended an additional $148,000,000 in meeting the costs of treatments for those patients who required assistance.

Included in the total amount allocated for professional education projects was $683,000 to continue the scholarship and fellowship programs in the fields of medicine and related biological and physical sciences, public health and preventive medicine for physicians. Also to be continued are teaching fellowships in physical therapy and scholarships for physical therapists. Newly added are teaching fellowships in occupational therapy and clinical fellowships in psychology and in psychiatry to meet the urgent need for properly trained specialists in handling the treatment problems of polio patients with respiratory involvements.

All fellowship and scholarship awards are administered at National Foundation Headquarters and are made upon recommendations of special advisory committees. Also approved in the educational projects was $67,700 for the production of teaching films, textbooks and other instructional aids.

National Health Council to Hold Forum on Nation's Health

The annual meeting of the National Health Council will be held March 18, 19, and 20 in New York City. The theme of the meeting will be "Advancing the Nation's Health."

International Congress of Rheumatic Diseases

The Eighth International Congress of Rheumatic Diseases will meet at Geneva, Switzerland, from August 24 to 28, 1953. An exhibition of medical, physical therapy, and radiologic material concerning rheumatology will be presented at the Congress. Manufacturers who are interested in this exhibition are invited to write for information to: Dr. H. Edelstein, Institut de Physiatrie, Hospital Cantonal, Geneva, Switzerland.

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Meet Our New Contributors

Donald A. Dupler, M.D., Associate in Medicine and Cardiology, University of Pennsylvania Graduate School of Medicine, attended Harvard Medical School where he received his medical degree in 1940.

Dr. Dupler is a Fellow of the American College of Physicians; Diplomate of the American Board of Internal Medicine; Chief of the Cardiac Clinic Graduate Hospital; and a member of the American Heart Association.

Illarion I. Gopadze, M.D., Assistant Professor of Surgery Graduate School of Medicine, University of Pennsylvania, was graduated from medical school at the University of Wisconsin in 1930, and spent an internship of two years at the Graduate Hospital in Philadelphia.

Dr. Gopadze was appointed Instructor in Surgery at the Graduate School of Medicine, University of Pennsylvania in 1935, and has been affiliated with this institution since. Dr. Gopadze is physician for the American League baseball team of Philadelphia.

Miriam Partridge, Research Assistant in the Department of Physical Medicine and Rehabilitation, University of Illinois Research and Educational Hospitals, Chicago, was graduated in 1943 from Ball State Teachers College, Muncie, India, with a B.S. degree in Physical Education. Three years later she enlisted in the U.S. Army and received her physical therapy training at Fitzsimons General Hospital where she was awarded a certificate in May 1946.

Miss Partridge served on active duty as physical therapist at Cushing Hospital, Framington, Massachusetts; Tilton General Hospital at Fort Dix, New Jersey; and Oliver General Hospital, Augusta, Georgia.

Prior to accepting the position of Research Assistant, Miss Partridge was Assistant Clinic Director at the University of Illinois Research and Educational Hospitals. She is a member of the American Physical Therapy Association and the American Registry of Physical Therapists.

Arthur A. Rodriquez, M.D., Assistant Professor of Physical Medicine at the University of Illinois, is also Assistant Head of Physical Medicine and Rehabilitation.

He attended the University of Illinois where he earned his B.S. degree. He later received his medical degree from the University's medical school.

Dr. Rodriquez is Consulting Psychiatrist and head of the Department of Physical Medicine and Rehabilitation at Illinois Central Hospital and at the City of Chicago Welfare Convalescent Home. He is President of the Chicago Society of Physical Medicine and Rehabilitation and a member of the American Society of Physical Medicine and Rehabilitation, and the American Congress of Physical Medicine.

Abstracts

The Medicine of the Future

James Stevens Simmons, M.D., MODERN MEDICINE, 20.69-75, November 1, 1952.

"Preventive Medicine is the medicine of the future." This statement was made a few years ago by Sir William Osler and modern advances point the way to the eventual fulfillment of Osler's dream. Disease prevention is a vital service to the nation and the responsibility for rendering such service must be shared by the professions of both medicine and public health. The general practitioner can increase his contribution to the community by practicing good preventive medicine and every American physician has a direct obligation to see that the agencies which are organized to operate community, state, and federal health programs are properly staffed, guided, and supported by the medical profession.

Rapid advances in civilian health have been made in the past two decades, and the mortality rate in children's diseases has been reduced 97 per cent. However, there are still numerous unsolved problems in curative and preventive medicine. Many citizens are disabled or killed each year by disease and accidents of of which the greater portion could be prevented. If the American people are to be protected in the future then a strong program must be provided by the medical profession to conserve life and health. The challenge of the future is twofold; 1) to reduce or eliminate, if possible, the preventable diseases and accidents and, 2) to intensify research toward improved methods of preventing childhood infections, to care for the increasing load of old age diseases and disabilities, and the almost overwhelming burden of mental diseases.

The author regards mental disease as the greatest problem and feels that more effort should be made to discover and remove specific causes rather than concern ourselves with the present nebulous symptomatic treatment. He proposes the possibility that inapparent residuals from childhood infections might produce enough weakness to vital tissues or organs to render them unusually susceptible to other stresses of life and thus interfere with normal function in later years. If this is true then intensive research studies to determine the long term or delayed results of children's diseases may help to unravel some of the important unsolved problems of geriatrics and the mysteries of mental diseases.

If preventive medicine is to become the medicine of the future then it must be included in the curriculum of all medical schools and carefully organized as a strong department staffed by distinguished, effective teachers of broad vision.

The Physiology of Ventilation in Chronic Lung Disease

Richard W. Westcott, POSTGRADUATE MEDICINE; 12:329-338, October 1952.

Better methods of evaluation, in the past decade or so, have clarified the effects of cardiopulmonary disease on the various steps in the respiratory gas exchange.

Pulmonary function consists mainly of three components: (1) ventilation, or the mass displacement of air in and out of the lungs, (2) alveolorespiratory function and (3) the relationship between pulmonary circulation and cardiac performance. The simple requirement of ventilation is accomplished through the action of many structural units and disorder of any of these units will be reflected in the amount and form of breathing.

To understand ventilatory function one must measure (1) the lung volume and its subdivisions, (2) the maximum breathing capacity and (3) the state of the minute volume of ventilation at rest and in response to exercise.

The lung volume measurements are made essentially with a spirometer in which complemental, tidal, reserve, and residual air are determined. The maximum breathing capacity is the greatest volume of air inspired and expired over a 15-20 second interval. The difference between the maximum breathing capacity and minute volume of ventilation is termed the "breathing reserve." The breathing reserve may be reduced either by hyperventilation (the most observed alteration) or by impairment of the maximum breathing capacity. The breathing reserve varies between 88 and 95 per cent of the maximum breathing capacity.

In pulmonary disease, ventilation is impaired by reduction of the maximum breathing capacity and breathing reserve. This is a mechanical disturbance and may result from (1) obstruction of the pulmonary airways and (2) restriction of pulmonary expansion and contraction. When breathing reserve falls below 60 to 70 per cent of the maximum breathing capacity, dyspnea usually results.

Characteristic changes in ventilation occur in chronic pulmonary emphysema as a result of bronchiolar narrowing and loss of pulmonary elastic tissue. A patient with pulmonary fibrosis may have an impairment of ventilation because of: (1) reduction in lung volume, (2) impaired pulmonary distensibility and (3) hyperventilation.

Alterations in ventilatory function as seen in chronic pulmonary emphysema and pulmonary fibrosis are discussed in great detail and therapeutic measures suggested.

The Clinic-Symposium: A Method for Teaching Total Patient Care in the Collegiate School of Nursing

R. Maureen Maxwell, R.N., NURSING WORLD, 126:14, October 1952.

The clinic-symposium in medical and surgical nursing used with considerable success by the College of Medical Evangelists School of Nursing in Loma Linda, California would seem to be a simple procedure because of the ease with which it is conducted. Actually, the successful clinic-symposium takes considerable preparation.

This preparation is started by a meeting of the medical and surgical nursing block (*i.e.*, medical and surgical nursing, pathology, physical therapy, diet therapy, and public health) who decide on the unit subject. This is followed by discussion in the weekly clinical instructor's council. Then comes the choice of a suitable patient and assignment of sophomore students to her care. Preference was given to students already on the unit where the selected subject was a patient, or to those whose individual need was for the care of this type of case. Nursing care responsibilities were given to these students. In addition, five students were assigned particular areas of nursing care for which they were responsible during the discussion and a bibliography was posted from which all students in the class might choose reading in preparation for the clinic-symposium.

Is it worth all this trouble? Definitely. The clinic-symposium encourages growth in building patient rapport, in preparing and discussing nursing care as a team, in clarity of expression, in logical reasoning, and in greater transference of knowledge to the needs of the patient. It can be used with equal success in relation to other clinical courses.

The Significance of Interpersonal Relationship

Sidney Berengarten, AM. J. NURSING, 52:1219-1222, October 1952.

The author believes that one of the most important criteria for selecting a candidate for the helping and healing profession is "how much love has this person received." Without having experienced affection and understanding a person cannot in turn give it to others. There must be enough affection in the individual's life to compensate for the ever persistent negative experiences. Thus, each person is conditioned by past negative and positive relationships.

A pronounced component of hostility in a personality makes it impossible for that person to be warm, sustaining, accepting and understanding. When a personality conflict arises between a staff member and patient, the supervisor may help the former to understand how and why he feels antagonistic toward the patient, and thus effect a change in attitude and approach. There must be a positive relationship between the supervisor and the supervised. If the worker can confide in and share some of his feelings with the supervisor, disturbing incidences will no longer be repressed and positive relations will develop. In addition, there must be a positive team relationship, that is, regard and concern for other people's time and duties.

It is important that the supervisor should have intellectual understanding of human behavior and a knowledge of technics in working with people (emotional undertones and overtones). The supervisor must be able to convey to his associates an inherent warmth, responsiveness, sensitivity and understanding through which this relationship may be developed. Although there must be authority in the hospital setting, rigid authoritative and restrictive supervision may endanger the future of the helping and healing profession and discourage candidates with healthy personalities. Without these persons, the profession would be stunted in its development because of the lack of analytical, imaginative and creative people with courage.

Upon what, then, does a good relation with and reaction to other people depend? The author believes that it depends upon the degree to which our basic needs have been met in the past, namely: to love and be loved, or to have a feeling of belonging; and to achieve, to have status, to be considered a success.

Metabolic Disorders in Paraplegics

Irving S. Cooper, M.D., and Thomas I. Hoen, M.D., NEUROLOGY, 2:332-340, July-August 1952.

The purpose of this paper was to summarize the metabolic disorders observed in 300 paraplegic patients over a five year period.

There is a marked catabolism of body protein. During the first two weeks after injury there is invariably a marked negative nitrogen balance. High protein diet does not mitigate this condition but rather increases the nitrogen output. In a majority of cases there is a reestablishment of normal nitrogen balance in eight to ten weeks following injury.

The source of nitrogen is the general body share of protein, particularly muscular tissue. There is a marked creatinuria observed in the first six to ten weeks following injury.

The severity of the spinal cord injury appears to be directly proportional to the increase of urinary excretion of nitrogen and creatinuria. The protein catabolic response to trauma is greatest in normal healthy young male adults, who constitute the majority of traumatic paraplegics.

The mechanism for the catabolic reaction has not been satisfactorily elucidated. Impaired liver function, as shown by the bromsulfalein liver function test, has been observed in many cases of severe acute spinal cord injury. No other commonly employed liver function tests demonstrate abnormality. Liver function returns spontaneously within eight to ten weeks following injury. The mechanism of this impairment is not clear. The basal metabolic rates of paraplegics is almost invariably decreased.

Unilateral or bilateral mammary enlargement develops in about 20 per cent of men who are paraplegic as a result of traumatic spinal cord lesions. It may appear from three months to five years following injury. Pain is associated in about 50 per cent of the cases. This enlargment disappears three to twelve months following its appearance. Pathogenesis is not clear.

Testicular atrophy appears in over 50 per cent of the paraplegic males. This is sometimes grossly observable but usually requires biopsy confirmation. There is a temporary elevation of the 17 ketosteroids appearing in the urine of paraplegic males during the first 48 hours following injury. Following this period there is a decrease lasting ten weeks to several years.

There is a cessation of menstruation in paraplegic females lasting three to six months.

It was possible to obtain absolute circulating eosinophil counts in six men within 24 hours after severe cord injury. Eosinophils were absent in the peripheral blood in all six cases. In four cases the count returned to normal in 48 hours and in the other two cases, four days following injury.

The use of testosterone propionate seems to mitigate the catabolic reaction, decreases nitrogen loss, materially lessens incidence of decubitus ulcers, and improves the nutritional status of paraplegics.

Vascular Lesions in Diabetes Mellitus: I. The Pathologic and Clinical Aspects of Atherosclerosis

Joseph I. Goodman, OHIO STATE MEDICAL JOURNAL, 48:1013-1018, November 1952.

The work of many investigators has shown that a high percentage of people having diabetes of 15 to 20 years' duration exhibit lesions of the vascular system which are responsible for approximately 50 per cent or more of the deaths.

The various vascular lesions do not occur singly but are usually combined. Atherosclerosis is the major cause of the fatal lesions in the diabetic.

Literally, sclerosis means hardening of the arteries but it is doubtful whether hardening is the essential change in all arteries. In larger vessels the major pathology is a softening and degeneration for which the name "atherosis" is suggested. Atherosis is observed chiefly in the intima of the large elastic arteries.

As presented by Boyd, the arteries are divided into three large groups: (1) the elastic arteries, (2) the muscular arteries and (3) the arterioles. Generally, atherosclerosis occurs in the elastic arteries and these vessels show a predisposition to occlusion. Medial sclerosis affects mainly the muscular arteries of the upper and lower extremities but, does not have the same potentiality for thrombotic occlusion as does atherosclerosis. Arteriolar sclerosis is best exemplified by nephrosclerosis in which the final degenerative change is a reduction in the lumen.

From a clinical point of view atherosclerosis is the most significant form of arteriosclerosis and in diabetes mellitus is an important sign of the great majority of the vascular complications.

Many studies have shown that coronary atherosclerosis is more frequent in the diabetic than in the nondiabetic patient. Occlusive peripheral arterial disease as a cause of disability in the diabetic patient is second only to coronary sclerosis. The diagnostic procedures proven to be the most reliable indications of atherosclerosis are:

(1) The carotid-sinus-pressure test.
(2) Palpation of the subclavian artery pulse.
(3) The presence of calcium in the aortic knob demonstrated by x-ray.
(4) Calcification of the abdominal aorta in a lateral film of the lumbar spine.
(5) Clinical evaluation of the arterial blood flow in the lower extremities.

The three types of sclerosis discussed occur in both diabetic and nondiabetics but appear to begin earlier in life and in more severe form in the diabetic than nondiabetic at comparative age levels.

Medial sclerosis seems to have minor pathologic significance, but the continuation of arteriolar and predominantly atherosclerosis causes ultimate disability and mortality in the diabetic patient.

Treatment of Fractures of the Hip

Carson R. Reed, Jr., M.D., and T. M. Oxford, M.D., New Orleans M. & S. J. 104:670-674, October 1952.

Reed and Oxford classify fractures of the hip as "intracapsular fractures of the neck of the femur" and "trochanteric fractures." Their method of treatment consists of the Smith-Petersen nail in the intracapsular fractures and the Thorton plate, in addition to the nail in the trochanteric fracture.

The authors feel that the use of portable x-ray machines placed both anteroposteriorly and laterally is of great value during surgery. An incision of 3 inches is made along the long axis of the thigh, at the level of the base of the greater trochanter. Guide wires of equal length are cut and one of these wires is drilled through the long axis of the neck of the femur into the head. The correct position of the guide wire is verified by x ray, and the correct length of cannulated Smith-Petersen nail to be used is determined by comparing the inserted guide wire with the uninserted guide wire of equal length. The nail is then threaded over the wire and driven into place. If a trochanteric fracture is being treated the incision is prolonged and the Thorton plate is added.

The patient is put into a sitting position the day after surgery and given deconditioning exercises. At the end of a week the patient is usually referred back to the family physician.

In 211 cases reviewed, 47.4 per cent were intracapsular fractures and 52.6 per cent trochanteric.

In the intracapsular fractures 94.7 per cent obtained union and 5.2 per cent of the cases went on to non-union. In 3 of the cases the nail slipped out of the head and in 7.7 per cent moderate aseptic necrosis of the head of the femur developed.

In all the trochanteric fractures boney union occured and in no case did asceptic necrosis take place.

The incidence of painful hips following an intracapsular fracture is greater than the mortality or incidence of non-union and in the future may offer an increasing problem according to the authors.

The Effect of Weight Training on Speed of Movement

Bruce M. Wilkin, Oakland Technical High School, Oakland, Calif. THE RESEARCH QUARTERLY, 23:361-369, October 1952.

This study was undertaken to test the hypothesis that training with heavy exercise of the resistance type causes an incipient muscle bound condition, defined in part as impaired speed of movement.

An arm apparatus was designed for the testing instrument and the following three groups of men participated in the study: 1) Experimental group—the men had no previous experience in weight lifting so that upon completion of the training period any difference in speed could be attributed to the experimental muscular exercise; 2) Chronic group—the men composing this group were all members of an organized weight lifting team; 3) Control group—these men were taken from beginning golf and swimming classes. (These activities are not considered strenuous.) The three groups were tested twice, before the experimental classes started and again at their completion.

Statistical examination of the results showed:

1. Weight training of one semester's duration had no slowing effect on the speed of arm movements measured in this study.

2. The chronic weight lifter is not "muscle bound" in terms of speed. His speed is as great as that of other students studied and improves as much or more during a semester of training.

3. A semester of weight training does not increase speed of movement more than a semester of swimming or golfing.

4. Daily training with weights may improve muscular endurance.

The Use and Care of Braces

Helen F. Nicholson, R.N., NURSING WORLD, 126:36-38, October 1952.

Braces and special corsets, extremely useful articles in certain conditions, achieve their purpose only if both the patient and the nurse have a good understanding of the correct use and care of these mechanical aides. They must be accurately measured and fitted to the individual patient and checked frequently for needed repairs or refittings.

Among the more common lower extremity braces are (1) the short leg brace used mostly for injuries or diseases of the ankle, (2) the long leg brace for supportive and stabilizing measures in weakened or paralyzed muscles, (3) the long leg brace with the ischial ring for immobilization and non-weight bearing of a part and (4) the bilateral long leg

brace with pelvic band where considerably more support is necessary as in spinal cord tumors or injuries.

Back braces and therapeutic corsets range from the simple fitted corset fashioned of heavier materials with the addition of a special sacroiliac pad on occasion to the Taylor-type back brace which stabilizes the entire vertebral column except for the upper cervical region. The latter may require additional support in the form of underarm pads or crutches.

In the upper extremity, the most commonly used appliance is the abduction or aeroplane type splint to prevent stretching of a weakened deltoid.

Measurements and proper fitting are the responsibility of the brace maker. Following completion and application to the part, the brace is checked by the doctor to see that it is achieving the purpose for which it was ordered. Intelligent use of the appliance is then made possible if both the nurse and the patient are familiar with its objectives.

As pointed out by the author, there are some general points which are helpful in the care of these patients. It is necessary to determine the extent to which the brace is to be worn; continuously if being used for immobilization, or during walking periods if prescribed for stabilization of weakened muscles, or to prevent weight bearing. Applying the brace is facilitated in the prone or supine position. Then with the patient in the upright position, check to see that the brace joints correspond with the anatomical joints, that the length is proper and correct alignment is obtained, and that there are no pressure areas which might result in a paralysis.

Skin care is extremely important in these cases. Powder is soothing and can be used to absorb moisture but must not be allowed to cake on the area. Powdered alum in alcohol or tincture of benzoin may be used with a doctor's order to help toughen certain skin areas. Frequent inspection of the skin is necessary to detect early signs of pressure or irritation. Such signs must be alleviated immediately by use of sponge rubber or readjustment of the brace. If sores and open abrasions should occur, it may prevent wearing of the brace for days or even weeks. Care is exerted when removing the limb from the leg brace and provision made for sandbags and pillows if the limb is to be maintained in the same position as when braced.

Care of this expensive, especially constructed device is also important. It is kept as clean as possible by wearing a cotton undershirt with the back brace and a long stocking with the leg brace making sure that there are no wrinkles or folds to cause pressure areas. It is frequently necessary or advantageous in the case of small children or incontinent patients to protect parts of the brace with a covering of a light waterproof material to prevent soiling by urine or feces. Leather parts are treated with a good leather conditioner such as neat's foot oil, then dressed daily with a light coating of a good saddle soap. Use as little water as possible and keep free from solvents or strong detergents. Remove lint and dirt from all movable locks and joints before oiling at least once a week and use a light-weight household or machine oil. Examine screws and bolts regularly as well as leather and canvas parts and tighten or repair at once. When not in use, store appliance in clean cloth bag or wrapping to protect it from dirt and moisture and store in a safe location.

Because of the psychological problem incurred and the adjustment necessary with the use of a brace, it is imperative to make the patient realize the importance of using the brace as ordered by the doctor. Insecurity and overdependence must not be allowed to develop. These can be combatted by pointing out the benefits to be derived from proper use of the brace, teaching the patient how to become adept in its use, and camouflaging by means of clothing where practical and possible.

In conclusion, the author points out that encouragement given by an understanding attitude, a good sense of humor, and intelligent direction of activities can do much to make life more enjoyable and productive for the patient who is wearing a brace.

An Electromyographic Study of the Trapezius Muscle

M. M. Wiedenbauer and O. A. Mortensen, AM. J. PHYS. MED., 31:363–372, Oct. 1952.

The authors attempt to analyze by experiment the trapezius muscle during a series of voluntary movements. The subjects of the experiments were eleven male medical students or faculty members. At least two series of records were made from each subject. A total of 950 electromyograms were taken during the study.

Seven pairs of electrodes, 4.0 cm. apart, were placed at predetermined points over the right trapezius. A modified Model A General Electric Cardiograph recorded the action potentials on film moving at a rate of 2.5 cm. per second. All records were made with the same amplification.

The trapezius muscle was active to a substantial degree during elevation or retraction at the sternoclavicular and acromioclavicular joints, and during flexion or abduction at the shoulder joint combined with upward rotation at the sternoclavicular and acromioclavicular joints. The electromyograms made during protraction or depression movements of the shoulder girdle showed very low amplitudes. During elevation the greatest activity was recorded from the upper portion of the muscle, during retraction from the middle and lower portions, and during flexion from the lower half. In each instance the muscle was definitely more active during the latter half of the respective movement. Abduction produced the greatest total activity of the muscle under study. More activity occurred during the early phases of this movement.

Management of Multiple Sclerosis

Hinton D. Jonez, MD. In POSTGRADUATE MEDICINE, 11:5:419, May 1952.

Physical therapy is of great value in the chronic cases of multiple sclerosis. Nonparalyzed, atrophic and weak muscles become functional again as a result of such therapy. Coordination exercises and muscle reeducation are part of this program. Badly contracted limbs are straightened with hot packs, simple orthopedic procedures, and braces. Various types of canes and crutches are useful in getting patients out of wheel chairs and walking again. However, short rest periods taken periodically during the day are beneficial and usually are necessary.

As an adjunct to physical therapy, voluntary muscle relaxation is very important. The principal drugs used for this effect are prostigmin, myanesin and curare. The latter has proved to be most valuable in the opinion of Jonez.

Treatment as outlined by Jonez does not cure, but it does arrest symptoms a great many times. Above all, it holds out hope to those patients with reference to their future. Bedfast cases have

been made ambulatory or wheel chair cases, and wheel chair patients have been made ambulatory. Still others have become symptom-free and remained so without an exacerbation up to periods of over five years. This is more than can be done for many other chronic diseases.

Conservative Management of the Low Back Syndrome

Robert Brashear, MD. In THE JOURNAL OF THE TENNESSEE STATE MEDICAL ASSOCIATION, 45:7:267, July 1952.

The various therapeutic measures available for conservative treatment of low back pain should be divided into those employed for the treatment of pain, and those employed in the protection and rehabilitation of the weak back. These measures overlap a great deal and the rehabilitation program may be used for the postoperative weak back as well as the weak back not operated on.

Manipulation should be considered first, not because its general use is advocated, but because it should be disposed of. We have been scientifically trained not to do things which we do not fully understand, and so far no one has adequately explained exactly what happens when an acute attack of low back pain is suddenly and completely relieved by manipulation.

Back strapping is useful and simple. Bed rest is considered the best treatment for low back pain, and all cases of severe back pain with sciatica should be hospitalized. Traction places a mild but steady pull on spastic muscles thus overcoming and relieving their spasm, and also has the very great advantage of keeping the patient in bed.

Heat and massage once or twice daily add greatly to the patient's comfort and help to relieve muscle spasm. An electric pad to the sore area one hour out of every four often is helpful and even the counterirritant effect of strong liniments is worthwhile.

In the rehabilitation of the weak back, heat and massage may be used. Patients are started on postural exercises as soon as pain permits. A qualified physical therapist is most important, for he will not only teach the patient to do the exercises which have been prescribed but will help to convince the patient that the exercise program is the one thing that will prevent recurrences. The exercises used are very simple and very brief. The development of good body mechanics is most essential, and the patient must be taught to associate good posture with those things he does often and in private.

The Role of Physical Medicine in the Management of the Upper Extremity Amputee

Raoul C. Psaki, Lt. Col., M.C., U.S.A., and Aniello F. Mastellone, Lt. Col., M.C., U.S.A. In UNITED STATES ARMED FORCES MEDICAL JOURNAL, 3:4:627, April 1952.

The rehabilitation of the upper extremity amputee is a five-point program, and each phase in the process is equally important to its ultimate success. The psychologic preparation of the patient is vital to the success of the program and should be the responsibility of all concerned with the management of the patient. The orthopedist evaluates the patient's surgical needs and provides an adequate stump. The physiatrist is concerned primarily with the preprosthetic and postprosthetic training of the amputee. This phase of the program is extremely important because the amputee must be encouraged to use the prosthesis and obtain the maximal functional benefit from it, particularly in bimanual activities.

The loss of an upper extremity produces a change in the patient's center of gravity and may produce defects of postural alinement, contractures, and muscular imbalance which will compromise the optimal functional result. Physical measures designed to prevent and correct these deformitories should be instituted as early as possible. When physical therapy is started the patient should be indoctrinated in the importance of postural exercises. The definitive preprosthetic measures are determined by an evaluation of the patient with respect to: (1) postural alinement, (2) joint mobility, (3) muscular strength, (4) the presence of pain, and (5) the condition of the stump.

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The treatment program consists of general measures such as mat exercises designed to overcome deconditioning, postural defects, and muscular atrophy and weakness; and specific measures such as the judicious use of heat, massage, proper bandaging of the stump, and therapeutic exercise to the involved extremity. Adequate mobility of the proximal segments of the extremity must be assured in order that the greatest functional use of the prosthesis may be obtained. Thus the mobility of the scapulas is of prime importance, particularly in patients who will be fitted with the shoulder-harness type of appliance. The degree of ultimate usefulness of the prosthesis depends on the active mobility of the shoulder girdle.

The Work of the Registry of Medical Technologists

Lall G. Montgomery, AM. J. M. TECHNOL., 18:248–256, Sept.-Oct. 1952

The Board of Registry reports the total number of medical technologists registered since 1928 is 21,652, of which 17,255 are currently registered. In addition to issuing certificates to medical technologists, 278 special or limited certificates have been issued to laboratory workers whose training fits them for only limited areas of medical laboratory work. The prob-

lems involved in classifying, training and setting the standards for these two groups are being considered.

There are 496 approved schools of medical technology, with a total capacity of 3,588 students. The increased number of small new schools applying for approval presents the problem of filling the larger and well established schools with students. The present trend in education is toward the establishment of collegiate affiliation and degree courses. Curriculum planning and recruitment and publicity have been and still are important projects to all those interested in medical technology.

The American Society of Medical Technologists is praised for its valuable assistance through collaboration attained on various combined committees with the Board of Registry and for its excellent programs at the annual national meetings.

Book Reviews . . . . .

New Outlook on Mental Diseases. *By F. A. Pickworth, M.B., B.S., B.Sc., Consultant Pathologist, Group 6 Hospitals, Birmingham; Formerly Director, Joint Board of Research for Mental Disease, City and University of Birmingham. Cloth binding; price, $12.00. Pp. 296; illus. 41. Williams and Wilkins Co., Baltimore, Md., 1952.*

The author states that his book is written especially for those having mentally afflicted patients in their care. It covers a wide range of neurological and psychological material, with emphasis placed upon the role of the blood supply in explaining normal reaction and pathological condition. The underlying hypothesis is that "the pattern of blood-flow in the cerebral tissues determines the pattern of association of somatic tissues, and this conditioning of reflex pathways for sensorimotor activities proves a satisfactory basis for correlating mental and medical phenomena."

The author believes that conflicting conclusions regarding "mental processes put forward by anatomists, biochemists, neurologists, physiologists and psychiatrists can be resolved by reduction to the common denominator of vasomotion; neurology to the conditioning of reflex pathways, and psychology to pattern changes of blood-flow throughout the cardiovascular system accompanying mental and emotional activities."

The book is concerned with anatomical, neurological, and psychological material in normal function and pathological disease process. Over 600 references are introduced as supportive evidence, and there is no doubt that the work reflects extensive research. The style is direct, and concise, and illustrations showing vascular phenomena are numerous and of very good quality. Paper and printing are in good taste and material generally is well presented.

Although the author declares initially that his hypothesis of vasomotion is controversial, as one reads the book the statements are often more dogmatic than seems justified by the evidence reported in the literature. An example of this is his reference to epilepsy, of which he says, "the type of personality in which it occurs is usually sensitive, conscientious, religious, hypochondriacal, and later irritable, suspicious, unreliable, aggressive, and sometimes dangerous." Obviously these attributes do not constitute any one "type" of personality, but are aspects of behavior which are seen in normal, neurotic, or, in fact, any other nonepileptic population.

It is felt that the book suffers somewhat by trying to cover too wide a scope which gives it a superficial quality, and by a tendency to oversimplify material. It is likewise true that even if it is possible to establish a direct relationship between psychological and organic changes reflected in the blood supply, cause and effect still can not be distinguished and therefore prediction cannot be made. The extent of the contribution, therefore definitely appears limited.

Essentials of Body Mechanics in Health and Disease. *By Joel E. Goldthwaite, M.D., F.A.C.S., L.L.D., Sc.D.; Lloyd T. Brown, M.D., F.A.C.S.; Loring T. Swaim, M.D.; John G. Kuhns, M.D., F.A.C.S., Sc.D. Cloth; price, $6.00. Pp. 356; illus. 135. J. B. Lippincott, Philadelphia, Pa., 1952.*

This fifth edition of "Essentials of Body Mechanics in Health and Disease," which appears to be most valuable as a reference book for physical education students, is similar to past editions, the first of which was printed in 1934. Dr. Goldthwaite was the organizer of the Orthopaedic Service of the Massachusetts General Hospital and is now a consultant. He is Ex-President of the American Orthopaedic Association and is also a member of the British Orthopaedic Association. Doctors Brown, Swaim and Kuhns have almost similar excellent qualifications for writing a book such as this.

The authors again stress the importance of good body mechanics from birth to old age, in the prevention of various medical, neurological, and orthopedic conditions. Most of the book deals with excellent descriptions of the several body types including variations in individual bone structure and variations in positions of the abdominal organs and the diaphragm. The significance of the above-mentioned structures is discussed in relation to developmental deformities, backache, impairment of the circulatory system, disturbances of abdominal viscera, diseases of the nervous system and arthritis. A very few illustrative case histories are given. Some persons may question the reliability of the case histories, since they are not of sufficient number to be significant in proving that improved body mechanics alone lead to such spectacular improvement. These case histories and almost all illustrations throughout the book are identical to the early editions, as is most of the content of the book. However, this new edition does add an excellent section on the foot which includes development, anatomy, and types of disabilities. Also added is a section on prenatal and postpartum care, and a chapter concerning geriatrics. Structural changes and disturbances in the various systems in the aging body are discussed in this last chapter, although the relationships to body mechanics is only briefly mentioned in some instances, with little explanation of statements.

The authors evidence marked conviction that poor body mechanics is the cause of most ills.

This small, compact, cloth-bound book is arranged in an order which makes for easy use, and the illustrations are good. References are given at the end of each of the thirteen chapters, but the majority of them are old, ranging from 1904 to 1950. There are many good references, but most were written prior to 1940.

In many respects this would be a good reference book for physical therapists who have no other book on normal body mechanics in their library, but for those who already have an older edition, this new edition would not contribute enough to warrant its purchase. It will be of greatest value to students who are studying the basic principles of the so-called "normal" posture.

Cerebral Palsy Institute Proceedings. *Prepared by Marguerite Abbott, B.S., O.T.R., Executive Director, the Coordinating Council for Cerebral Palsy in New York City, Inc. Sponsored by the Coordinating Council. Paper cover spiral; price, $1.50. Pp. 136. Association for the Aid of Crippled Children, New York, N. Y., 1950.*

This book contains the proceedings from the first professional Cerebral Palsy Institute sponsored by The Coordinating Council for Cerebral Palsy in New York City, Inc. held in November 1950. It has been ably prepared by Marguerite Abbott, Executive Director of the sponsoring council and an outstanding occupational therapist in the specific field of Cerebral Palsy.

The proceedings include thirty-one articles varying from a few complete, inclusive, technical papers by outstanding authorities in their specific fields to several short papers and outlines on the more sociological aspects of cerebral palsy. It would be far too lengthy to discuss each paper individually; however, I would like to mention a few among the more important ones. Dr. Phelps, as usual, gives an excellent paper on the etiology and diagnostic classification of cerebral palsy — all inclusive and recent. Dr. Perlstein discusses the role of drugs in the treatment of cerebral palsy; this should be of particular interest to physical therapists because of his discussion of the psychological effect on the results of treatment. Dr. Palmer presents an excellent paper on speech disorders and the corrective technic used, relating it to other phases of treatment, particularly physical therapy. Miss Abbott briefly reviews the methods of treatment for the cerebral palsied stressing the importance of fitting the treatment to the needs of the child.

The book as a whole gives an excellent survey of the Cerebral Palsy field, its problems and how they may be solved, illustrating the important "trend for professional personnel working with the cerebral palsied toward integration as a team," consisting of the doctor, physical therapist, occupational therapist, speech therapist, medical social worker, nurse, psychologist, teacher and vocational counselor. So in whatever field the reader may be, that phase is discussed at least briefly, leaving for the most part the more technical knowledge to be gained from other sources. Also, these proceedings give an excellent insight into the total field of Cerebral Palsy, which is so very important for anyone considering this specific field and even more important for those already in the field.

Occupational Licensing Legislation in the States. *Sidney Spector, Director of Research; William Frederick, Associate Director. June 1952 edition. Paper bound; price, $3.00. Pp. 106 with 3 appendices and 7 tables. Published by the Council of State Governments, Chicago, Illinois, 1952.*

This is a report of a survey of professional and occupational licensing practices in the United States, requested of the Council of State Governments by the 1951 Governors' Conference.

The objectives are to help legislators and administrative policy makers form decisions by providing basic background information on present issues involved in state licensing systems. "It is concerned primarily with problems of public health and welfare; problems of potential monopoly, the barriers to the free choice of an individual in selecting his vocation; and the extent to which state officials have effective control over the administrative machinery of examination and licensure." Both sides of the issue are well presented and standards for arriving at decisions are suggested. It traces the development of licensing boards from the old guild systems of Europe to the present types. It lists those occupations now licensed by the states requiring individuals to meet educational experience qualifications and/or pass examinations and also shows how the licensing process increases the recognition and stature of a profession within the state. A trend from voluntary to compulsory licensing seems indicated, and criteria for distinguishing a profession from other occupations are outlined. Hazards involved in formulation of standards in occupations and professions are mentioned and the difficulties ensuing from too stringent reciprocity rules are discussed. "There is widespread opposition to limiting free competition unnecessarily by establishing new groups of persons who can practice their calling only under state license."

An extensive bibliography and three highly enlightening appendices furnish basic statistical information on licensure in the several states. In Appendix "A" there is one gross error in the definition of physical therapists by stating that the physical therapist is "one who prescribes" treatment.

This factual booklet should be read and used as a manual by all persons concerned with contemplating, attempting or maintaining licensure of their occupation or profession.

Diseases of the Nervous System Described for Practitioners and Students. *By F. M. R. Walshe, M.D., D.Sc., F.R.S., Consulting Physician to University College Hospital, London. Seventh Edition. Cloth binding; price, $5.50. Pp. 365; illus. 63. Williams and Wilkins Co., Baltimore, Md., 1952.*

This book is arranged in two sections. The first sixty pages contain general information of the principles of neurological diagnosis. Important anatomical and physiological concepts of the nervous system are presented as a means of simplifying the vast subject so that the book itself "serves as a text for students and general practitioners." The remaining pages contain an adequate description of the more common neurological diseases. The extent of information given is dependent upon the relative importance of each disorder in the general practice of medicine.

The seventh edition is brought up-to-date with additional facts about multiple sclerosis, encephalitis, acute poliomyelitis, intracranial hematoma and epilepsy. Although the various aspects of treatment are considered, the discussion consists of the use of drugs, primarily. The patient with neurological disease usually has a chronic condition which responds to measures of rehabilitation in many ways. The author would have done well to reserve a few paragraphs on this subject instead of the inade-

quate references to massage, electrotherapy, and remedial exercises.

In general the book is easily read and the author succeeds in simplifying many patterns of neurological disorders. There is no bibliography, which, to this reviewer, is a necessary part to all textbooks. The book may be recommended to those engaged in medical studies and to those interested in the mechanism of neurological diseases.

Winning Ways with Patients. *Public Relations Department, American Medical Association, Chicago, 1952.*

This booklet contains practical and pertinent suggestions on the practice of public relations in the doctor's office. The doctor's public relations are influenced favorably or unfavorably by the daily individual impressions made on the patient by the assistant personnel. This booklet enlarges on the "key to a high office personality." It is attractively styled and its message is cleverly and lucidly worded—witness the titles of some of the sections—"Telephone Tactics," "Personality Unlimited," "Home Sweet Waiting Room," "Human Monkey-Wrenches."

Although the contents are directed primarily to the medical secretary or receptionist, the suggestions are applicable to any and all personnel working with patients. Certainly the physical therapist can benefit from the recommendations in this booklet.

Circulatory Dynamics. Physiologic Studies. *Carl J. Wiggers, M.D., SC.D., F.A.C.P. Professor of Physiology and Director, Department of Physiology, School of Medicine, Western Reserve University, Cleveland, Ohio. Cloth binding; price, $4.00. Pp. 107, illus. 44. Grune & Stratton, New York, 1952.*

When a senior investigator is asked to give a series of lectures on the subject to which he has contributed for 30 years the result can be expected to be unusual. The present author has done more. He has reviewed the work to which he has been one of the major contributors, has analyzed earlier work in the light of later results, and has prepared a series of lectures given in different parts of the country over the better part of a year. He has then reproduced the material in a short book containing three chapters dealing with basic hemodynamic principles, determinants of cardiac performance, and ventricular contraction under abnormal conditions. This book is more than a review of hemodynamics. It is the analysis by one of the foremost physiologists of his own field of research. The reader is guided quite firmly through a difficult field, he is not allowed to get lost in controversial issues. The physiologist will read this little book from cover to cover and will be grateful to the author for having taken the time to look back on his field over a considerable period of time and for having analyzed, digested, and condensed the work to which he himself has contributed so much.

Mastering Your Disability. *By Harold A. Littledale. Cloth binding; price, $2.75. Pp. 224. Rinehart and Company, New York, N.Y., 1952.*

This book was written by a paraplegic in the hope that he can help other disabled persons who do not have the opportunities of receiving instructions at rehabilitation centers or hospitals.

The first part of the book tells how life is changed from the normal way of life to that of a disabled person. Criticism is made of the medical profession for not rehabilitating the disabled to the utmost. Various "rackets" in the selling of braces and artificial limbs are discussed.

Discussion is given on various types of equipment needed by the disabled person to get around in the home and at places where he is employed. There are excerpts of letters from disabled persons telling how they have gained control over bladder and bowel regulations, how they have adjusted themselves to make a living at various jobs.

Procedures are given concerning walking with braces and crutches, how to move from wheel chair to another chair, how to get up and down stairs, how to get in and out of a car, how to travel easily by car, train, or plane, and other activities.

Suggestions are given for hobbies to interest a disabled person. Letters to the author tell how disabled persons are earning their own living at various types of jobs. These ideas and examples should prove stimulating and helpful.

The author also describes many gadgets that can be made easily at home to aid the disabled person to get about.

The Old Egyptian Medical Papyri. *By Chauncy D. Leake, Vice-president, University of Texas-Medical Branch Galveston. Cloth; price, $2.00. Pp. 108. University of Kansas Press, Lawrence, Kansas, 1952.*

This little volume is the result of the author's many years of study of old Egyptian medical papyri and his recent translation of the Hearst Medical Papyrus. It is the Second Series of the Logan Clendening Lectures on the History and Philosophy of Medicine.

From the abundance of scholarly material which is available the author has selected and summarized what would be of interest to the intelligent layman, physician, or medical student and prepared it for the amusement of those who are interested in the development of medicine rather than for the expert medical historian or Egyptologist.

The eight chief medical papyri are briefly described by the author and listed in table form as to date, location, and reference sources and in another table the character of each is listed as to its condition and contents.

In separate sections the author discusses Old Egyptian Weights and Measures, Drug Measurements in the Old Egyptian Papyri and Ancient Egyptian Therapeutics. The study of the complicated and confusing symbolism of old Egyptian weights and measures suggests that measurement was developed gradually and empirically. Simple parts of the body were used as a comparison. For relatively short distances the digit or palm or span of the hand was used and the cubit (the distance from the elbow to the knuckles) was also employed; land distances and areas were measured by foot or pace. Capacity measurements also referred to human factors such as a mouthful and handful. One of the symbols used in writing the early prescriptions was the shape of a mouth.

The prescriptions show great care in giving directions for the use of drugs to be administered by mouth, while those for external application are less specific. Many of these prescriptions are for casts for broken bones, and for immobilization bandages which were used with ointments for injured joints and muscles.

The author devotes a large part of this interesting little book to the discussion of the Hearst Medical Papyrus which he and his co-workers have translated. Included are extensive annotations of the diseased conditions which are described and the drugs which are recommended. This

material, the author states, is in the continuous process of revision and he reports only tentative generalizations in this volume. An appendix lists the prescriptions contained in this papyrus with the translated title of the prescription and the general character of each.

The author states that "a careful perusal of the eight available old Egyptian Papyri cannot fail to result in some degree of astonishment at the relatively high character of medical knowledge possessed by the old Egyptian physicians, in contrast as is usual with the superstitious attitude about sickness on the part of the people." He believes that these physicians were reasonable men, practically inclined who profited from experience; that the amounts of the drugs they prescribed were measured by convenient, practical and empirically developed capacity utensils; and that their therapy seems to be empirically rational.

This is an interestingly written contribution to medical history.

Deaf Children in a Hearing World. *By Miriam Forster Fiedler, Ph.D., Director of Psychological Research, Clarke School for the Deaf; Assistant Professor, Department of Education and Child Study, Smith College. Cloth; price, $5.00. Pp. 320; illus. 4. Ronald Press Company, New York City, 1952.*

The title of the book suggests a study of behavior patterns of children with a particular handicap when living in a normal milieu. Instead, the greatest portion of the book deals with parental reactions, round table discussions between parents and leaders, and case presentation of the eleven children who provide the basis for the study.

These hard-of-hearing and deaf children, with their mothers, were enrolled for a four week institute, in the Department of Child Study at Vassar College. Each child was placed in a group of children with normal hearing in a living-in program with particular emphasis on a functional approach to speech therapy, rather than the time-honored drill method of speech therapy. The mothers attended lectures on child development, with particular relation to her child's problem.

It is recognized by the author that the group studied is too small and the elapsed time too short to draw conclusions which may be statistically significant. The subjective impression gained from observation of the children, parental reactions, and teachers' comments, is that the child with a hearing handicap develops along the same lines as does the child without such a defect; that personality traits are accentuated both by the handicap and by the way it is regarded by the family; and that development more nearly approaches normality when the child is exposed to a normal environment.

Although Dr. Fiedler has presented a valuable contribution to the understanding of hearing-handicapped children and their parents, the study might have been more effective had it been presented more objectively, with direct studies of the childrens' actions rather than the reactions which they produced on those about them.

The book is easily read, and will be found of value as a reference work.

Your Child Can Be Happy in Bed: Over 200 Ways Children Can Entertain Themselves. *By Cornelia Stratton Parker. Price, $2.95. Pp. 275. Illustrated. Thomas Y. Crowell Co., New York, 1952.*

Innumerable times in the life of every child, sick or well, comes that plaintive question, "What can I do now?" To the harassed parent faced with that query, whether from a bedbound, or weather-bound youngster, this book offers over two hundred answers. The author suggests a large variety of practical, inexpensive activities which require, for the most part, easily obtainable materials. There are chapters on such handicrafts as drawing and painting, modeling, carving, papier-mache, paper craft, dolls, puppets, sewing; hobbies such as stamp collecting, music, reading, animals and pets, and games. These chapters contain simple, clear, easy to follow directions which are further clarified by the charming little drawings scattered throughout the book. Many of the chapters also contain bibliographies and sources of materials. Chapter Twenty, which is a compilation of helpful lists and recipes, adds greatly to the reference value of the book. The scope of the subject matter is wide enough to satisfy the interests of even the most capable child and to cover the age range from infant to about ten years.

The type face and spacing make the text easily legible, the page size, 5⅜ by 8 inches, and the weight make it a handy volume.

Mrs. Parker's style of writing is easy and informal, makes you feel that it would be fun to go immediately and try some of these things yourself. Her approach to the problem of helping the child to entertain himself is one of sympathy with and understanding of his needs for activity and emotional satisfaction at his own level rather than on our adult level that, so often, we unthinkingly and arbitrarily impose upon him.

Though this book is directed toward the parents of the convalescent child, it should be invaluable for every parent interested in the healthy emotional development of his children. It provides a guide, in readable, nontechnical language, to activities suited to each age and interest range. It could also be used as a reference book and manual by the physical therapist, nurse, and volunteer worker who is confronted with the task of providing for the amusement and recreation of their young charges.

Patterns of Organization of the Central Nervous System. *Edited by Philip Bard, Ph.D., Professor of Physiology and Director of the Department of Physiology, School of Medicine, Johns Hopkins University, Baltimore, Md. Vol. XXX of the Official Proceedings of the Association for Research in Nervous and Mental Diseases. Cloth; price, $12.00. Pp. 896; illus. 268. Williams & Wilkins Co., Baltimore, Md., 1952.*

This volume contains a series of papers presented at the annual meeting of the Association for Research in Nervous and Mental Diseases. In it are contributions by some of the leading research neurologists and anatomists. Fundamental patterns of organization and reactions within the central nervous system are presented. Such material is hardly recognizable by the average student or physician as belonging to his general scope of neurology. Indeed, the presentations are so technical and academic that even those who specialize in the nervous system will find it extremely difficult of comprehension. Nevertheless, the subject matter will be interesting to those working in basic research, and no doubt contains many "pearls" from this field.

The reviews here published have been prepared by the competent authorities and do not represent the opinions of the American Physical Therapy Association.

Schools of Physical Therapy

APPROVED BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS
OF THE AMERICAN MEDICAL ASSOCIATION

Graduates of these schools are eligible for membership in the American Physical Therapy Association.

California

School of Physical Therapy
Children's Hospital Society
4614 Sunset Blvd., Los Angeles 27
(Univ. of California, Los Angeles)

School of Physical Therapy
College of Medical Evangelists
White Memorial Hospital
Boyle & Michigan Aves.
Los Angeles 33

Department of Physical Therapy
University of Southern California
University Park
Los Angeles 7

Curriculum in Physical Therapy
School of Medicine
University of California
3rd & Parnassus
San Francisco 22

Division of Physical Therapy
Stanford University
Stanford

Colorado

School of Physical Therapy
Department of Medicine
University of Colorado
4200 East Ninth Ave.
Denver 7

Connecticut

School of Physical Therapy
University of Connecticut
Box U 101
Storrs

Illinois

†*School of Physical Therapy
The Medical School, Northwestern University
303 East Chicago Ave.
Chicago 11

Iowa

†Department of Physical Therapy
State University of Iowa
University Hospitals
Iowa City

Kansas

School of Physical Therapy
University of Kansas — Medical Center
Kansas City 3

Louisiana

†Charity Hospital School of Physical Therapy
1532 Tulane Ave.
New Orleans

Massachusetts

*Course in Physical Therapy
Bouve-Boston School
Medford 55
(Tufts College, Medford)

*Program in Physical Therapy
Simmons College
Children's Medical Center
300 Longwood Ave.
Boston 15

*Department of Physical Therapy
Boston University
Sargent College of Physical Education
6 Everett St.
Cambridge 38

Michigan

Curriculum in Physical Therapy
Dept. of Physical Medicine & Rehabilitation
University Hospital
University of Michigan
1313 East Ann St.
Ann Arbor

Minnesota

Course in Physical Medicine
The Medical School
University of Minnesota
Minneapolis 14

†School of Physical Therapy
Mayo Clinic
Rochester

Missouri

Department of Physical Therapy
Division of Auxiliary Medical Services
School of Medicine
Washington University
Barnes Hospital
600 S. Kingshighway
St. Louis 10

Division of Health & Hospital Services
St. Louis University School of Nursing
1402 South Grand Blvd.
St. Louis 4

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* Only women accepted.
† Only certificate awarded.

New York

*Physical Therapy School
Albany Hospital
New Scotland Ave.
Albany 1
(Russell Sage College, Troy)

Program in Physical Therapy
University of Buffalo
2183 Main St.
Buffalo 14

Division of Physical Therapy
College of Physicians & Surgeons
Columbia University
630 W. 168th St.
New York 32

Curriculum in Physical Therapy
School of Education
New York University
Washington Square
New York 3

North Carolina

†Division of Physical Therapy
School of Medicine
Duke University
Durham

Ohio

School of Physical Therapy
The Frank E. Bunts Educational Institute
Euclid & East 93rd St.
Cleveland 6
(Cleveland Clinic)

Pennsylvania

†The D. T. Watson School of Physiatrics
Leetsdale

Division of Physical Therapy
School of Auxiliary Medical Services
University of Pennsylvania
1818 Lombard St.
Philadelphia 46

Texas

†Grady Vaughn School of Physical Therapy
Baylor University Hospital
Dallas 1

†School of Physical Therapy
Hermann Hospital
Houston 5

School of Physical Therapy
The University of Texas — Medical Branch
Galveston

Virginia

Physical Therapy School
Baruch Center of Phys. Med. & Rehabilitation
Medical College of Virginia
Richmond 19
(Richmond Professional Institute)

Wisconsin

Section in Physical Medicine
Medical School
University of Wisconsin
Madison

U. S. Army Medical Service

†* Physical Therapy Course

Medical Field Service School
Brooke Army Medical Center
Fort Sam Houston, Texas and
Brooke, Letterman, and Walter
Reed Army Hospitals

Write to: The Surgeon General
Department of the Army
Washington 25, D. C.
Attention: Personnel Division

* Only women accepted.
† Only certificate awarded.

Education does not mean teaching people what they do not know. It means teaching them to behave as they do not behave. It is not teaching the youth the shapes of the letters and the tricks of numbers, and then leaving them to turn their arithmetic to roguery, and their literature to lust. It means, on the contrary, training them into the perfect exercise and kingly continence of their bodies and souls. It is a painful, continual, and difficult work to be done by kindness, by watching, by warning, by precept, and by praise; but above all, by example.

JOHN RUSKIN

Classified WANT-ADS

WANTED: Recent graduate of approved school of physical therapy by growing physical therapy department in private orthopaedic clinic. Now have two on staff. Urgently need a third. Attractive working conditions and salary. Staff of six orthopaedic surgeons refer variety of cases. For details write Maria M. Kennedy, Chief Physical Therapist, Miller Orthopaedic Clinic, 123 W. 7th St., Charlotte, N.C.

WANTED: Coordinator for professional services at Eastern New York Orthopaedic Hospital-School, Inc., Schenectady, N. Y., an institution doing orthopaedics only; located near the Ellis Hospital, a 300-bed general hospital. Services to be coordinated — physical therapy, occupational therapy, speech, medical social, and rehabilitation. Medical services are under the direction of a Diplomate of the American Board of Orthopaedic Surgeons. Modern building and equipment; splendid supervising staff. Excellent salary. Apply to: Miss Anastasia McConnell, R.N., 124 Rosa Road, Schenectady, N. Y.

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WANTED: Physical therapists (2) for children's convalescent home. Good salary and working conditions with annual increment. Five-day, 40-hour week. Completely equipped department. For details write Superintendent, Betty Bacharach Home, Longport, N. J.

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WANTED: Registered physical therapist to work in general physical medicine and rehabilitation program in university hospital. Write: Frederic J. Kottke, M.D., University of Minnesota Hospitals, Minneapolis 14, Minnesota.

EXCELLENT opportunity for research-minded male therapist interested in the field of prosthetics. Inservice training given prior to laboratory and field testing responsibilities in this area. Must be able to travel extensively. Congenial working conditions and salary commensurate with qualifications and experience. Write to Dr. Sidney Fishman, Project Director, Prosthetic Devices Study, College of Engineering, New York University, 252 7th Ave., New York, N.Y.

WANTED: STAFF physical therapist for cerebral palsy outpatient department in a children's hospital. Cerebral palsy training preferred. Attractive salary, forty-hour week, sick leave, four-week vacation. Apply to Mrs. Patricia Futera, Director, Cerebral Palsy Clinic, The Children's Hospital, Nineteenth Avenue at Downing Street, Denver 18, Colorado.

QUALIFIED PHYSICAL THERAPIST desired by 31-inpatient rehabilitation hospital. Excellent salary. OPD, PT, and OT clinical training center. Write Medical Director, Miriam Hospital, 501 Bacon, Webster Groves, Missouri.

WANTED: Senior physical therapist for advisory service to nursing staff, supervision of physical therapy staff, and direct service to selected patients in an assigned territory; staff physical therapists for service to patients in their own homes under medical prescription and technical supervision. Salary dependent upon education and experience. Five-day week; liberal holiday, vacation, and sick leave allowance. Near two approved schools and a third now being organized locally; university facilities available locally for continuing study. Immediate placement. Write to Ruth E. Te Linde, Executive Director, Visiting Nurse Association, 1234 North Prospect, Milwaukee, Wisconsin.

WANTED IMMEDIATELY: Qualified male physical therapist, 40-hour week, 2 weeks' paid vacation, 6 holidays, good starting salary with regular increases. General P. T. work in 250-bed general hospital with center for handicapped children and adults. Permanent. Contact Sister Edwina, St. Mary's Hospital, E. St. Louis, Illinois.

WANTED: Physical therapist. Excellent salary and good working conditions. Vacation period. Contact Robert Landesman, Director, Cerebral Palsy Clinic, Liberty-Loomis Hospital, Liberty, N. Y.

POSITION OPEN for 2 physical therapists; 35-hour week, school holidays, vacation, sick-leave privileges. Write to: San Antonio Cerebral Palsy Center, 305 Austin Street, San Antonio, Texas.

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June 14-20, 1953

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